



Original Article

Total ruptures of the extensor apparatus of the knee[☆]



Diogo Moura*, Fernando Fonseca

Centro Hospitalar e Universitário de Coimbra, Departamento de Ortopedia, Coimbra, Portugal

ARTICLE INFO

Article history:

Received 12 February 2016

Accepted 18 March 2016

Available online 25 October 2016

Keywords:

Rupture

Knee

Range of motion, articular

Patella

Tendons

ABSTRACT

Objective: This was a retrospective case-control study on total ruptures of the extensor apparatus of the knee, aimed to compare patella fractures with tendinous ruptures.

Methods: The sample included 190 patients and 198 total ruptures of the knee extensor apparatus. All patients were evaluated by the same examiner after a minimum one-year follow-up.

Results: Tendinous ruptures occurred most frequently in men, in younger patients, and had better clinical and functional outcomes when compared with patella fractures; however, the former presented higher levels of thigh atrophy. Patella fractures occurred most frequently in women and in older patients and caused most frequently residual pain, muscle weakness, and limitations in daily activities. Comminuted fractures were related to high-energy trauma, lower clinical and functional outcomes, and higher levels of residual pain and osteosynthesis failure. Early removal of osteosynthesis material was related to better outcomes. Regarding the tendinous ruptures, over half of the patients presented risk conditions for tendinous degeneration; a longer delay until surgery was related to lower Kujala scores.

Conclusion: The surgical repair of bilateral ruptures of the knee extensor apparatus resulted in satisfactory clinical and functional outcomes, which were better for tendinous ruptures when compared with patella fractures. However, these lesions are associated with non-negligible levels of residual pain, muscle weakness, atrophy, and other complications.

© 2016 Sociedade Brasileira de Ortopedia e Traumatologia. Published by Elsevier Editora Ltda. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Roturas totais do aparelho extensor do joelho

RESUMO

Objetivo: Estudo retrospectivo sobre roturas totais do aparelho extensor do joelho que compara as fraturas da patela com as roturas tendinosas.

Métodos: Amostra com 190 pacientes e 198 roturas totais do aparelho extensor do joelho. O tempo mínimo de seguimento após a cirurgia foi de um ano e todos os pacientes foram avaliados clínica e radiologicamente pelo mesmo médico.

Palavras-chave:

Rotura

Joelho

Amplitude de movimento articular

[☆] Study conducted at the Department of Orthopedy, Centro Hospitalar e Universitário de Coimbra, Coimbra, Portugal.

* Corresponding author.

E-mail: dfilmoura@gmail.com (D. Moura).

<http://dx.doi.org/10.1016/j.rboe.2016.10.012>

2255-4971/© 2016 Sociedade Brasileira de Ortopedia e Traumatologia. Published by Elsevier Editora Ltda. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Patela
Tendões

Resultados: As roturas tendinosas ocorrem mais frequentemente em homens, em pacientes mais novos e estão associadas a níveis clínico-funcionais superiores em relação às fraturas da patela. No entanto, com atrofia da coxa mais frequente. As fraturas patelares ocorrem mais frequentemente em mulheres com idade mais avançada e provocam mais frequentemente dor residual, déficit de força muscular e limitação das atividades da vida diária. A maior cominuição das fraturas da patela esteve associada a resultados clínico-funcionais mais desfavoráveis, a níveis mais elevados de dor residual e de desmontagem do material de osteossíntese. A extração precoce do material de osteossíntese esteve associada a melhores resultados. No grupo das roturas tendinosas, mais de metade apresentava doenças consideradas de risco para degeneração tendinosa e um tempo de espera mais prolongado até a cirurgia demonstrou valores de escore de Kujala significativamente inferiores.

Conclusão: O tratamento cirúrgico das roturas totais do aparelho extensor do joelho garante bons resultados funcionais, que são superiores para as roturas tendinosas em comparação com as fraturas da patela. No entanto, estão associadas a níveis importantes de dor residual, fraqueza muscular, atrofia muscular e outras complicações.

© 2016 Sociedade Brasileira de Ortopedia e Traumatologia. Publicado por Elsevier Editora Ltda. Este é um artigo Open Access sob uma licença CC BY-NC-ND (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Introduction

The extensor apparatus of the knee consists of three basic structures: two tendons, the quadriceps and patellar; and one bone, the patella. The total rupture of this apparatus can occur through the bone or tendon, leading to an inability to actively extend the leg. Patellar fractures are more frequent than tendinous ruptures, in ratios ranging from 17:1 to 43:1; ruptures of the quadriceps tendon are more frequent than those of the patellar tendon.^{1,2} These injuries require surgical reconstruction of the extensor apparatus in order to recover the extension function.³ To date, only one study has directly compared clinical and functional results of patellar fractures and tendinous rupture of the extensor apparatus of the knee.³

Material and methods

This was a retrospective study, comprising a mean of 5.1 years (range 1–10); 190 patients were retrieved, corresponding to 198 total ruptures of the extensor apparatus of the knee that were surgically treated. All patients with other associated traumatic injuries and those who could not be followed-up for a minimum of one year after surgery were excluded. The clinical evaluation included functional assessment, measurement of range of motion, and the application of a validated score for patellofemoral pathology, the Kujala score.⁴ The degree of patient satisfaction was also assessed in a scale from 0 to 5, were 0 – dissatisfied, and 5 – totally satisfied. Radiologically, patients were assessed for fracture classification (AO classification)⁵; presence or absence of consolidation; patellofemoral arthrosis; patellar height, using the Insall and Salvati index⁶; and whether or not the osteosynthesis material was extracted. The variables were treated statistically using SPSS_{v23}, and a 0.05 significance level was adopted. Quantitative values were presented as mean ± standard deviation (minimum–maximum), and qualitative values as number (n) or percentage (%). For comparisons between two groups

with quantitative variables, Student's t-test was used; the Mann–Whitney test was used when the values were very low. To compare among three or more groups, ANOVA was used. For comparisons between two groups with nominal variables, the chi-squared test was used; for ordinal variables, the Mann–Whitney test. To study the association between quantitative variables, Pearson's correlation was used; for the multivariate study, the general linear model (GLM) analysis was adopted. The study was approved by the Ethics Committee of the Centro Hospitalar e Universitário de Coimbra and all patients or their respective families signed an informed consent form.

Results

The sample consisted of 190 patients or 198 ruptures, as eight were bilateral. The mean age was 58.82 ± 17.86 years (range 18–90) and 56.6% were male. Of the total, 67.17% (n = 133) was patellar fractures; tendinous ruptures of the extensor apparatus accounted for the remaining 32.82% (n = 65), which were divided between quadriceps tendon ruptures (56.9%) and rupture of the patellar tendon (43.1%; [Table 1](#)).

In the analysis of the group with patellar fractures, the most common mechanism of injury was low energy (87.1%) direct trauma (86.4%). The predominant types of patellar fracture were C1, C3, and A1 considering the AO classification ([Fig. 1](#)). Comminuted type C patellar fractures (C1 to C3) showed a significant association ($p = 0.004$) with high-energy trauma. Types of osteosynthesis used were figure-of-eight tension band with Kirschner wires (74.2%), circular tension band with Kirschner wires (9.8%), screws (3%), and double tension band with Kirschner wires (1.5%). In 83% of cases, two Kirschner wires were used. In type A1 fractures, hemipatellectomy was performed, followed by tendon reinsertion. The functional outcomes and complications of the surgical treatment of patellar fractures are presented in [Table 1](#). Statistically significant differences were observed between type C1 and C3 fractures regarding the mean Kujala score (74.3 ± 14.62

Download English Version:

<https://daneshyari.com/en/article/8600575>

Download Persian Version:

<https://daneshyari.com/article/8600575>

[Daneshyari.com](https://daneshyari.com)