

Fractures of The Patella In Adults: A Report Of 22 Cases

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Abstract:

Fractures of the patella are functionally serious, they are relatively frequent 1% of skeleton fractures, our study about 22 cases of fractures of the patella in the service of orthopedics at military hospital Moulay Ismail over a period of 4 years from January 2014 to December 2018 . The age of patients vary between 16 and 81 years with a medium of 43 years. The circumstances were dominated by traumatic injuries from the public . The fracture was transverse displaced cross in 12 cases (55%), Dermal opening was found in 22% of cases. Osteosynthesis was installed to 22 patients (91%), The most commonly used osteosynthesis technique in our series was roving, which was performed in 64% of cases The analysis of the functional results was based on the BOSMAN rating scale, with excellent results in 55%, good in 36% and bad in 9%. According to our work, the complexity of the fractures, the type of osteosynthesis material, the digital verification of fracture reduction, the poor practice of rehabilitation and the advanced age were the main factors making the functional prognosis of these fractures bad .

Mots clés: Fracture, Rotule, Chirurgie

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I. Introduction

Patella fractures represent 0.5 to 1.7% of skeletal fractures. These fractures can compromise the functional prognosis of the knee and therefore the socio-professional and sports future of the injured. Improper treatment exposes many complications, including stiffness and femoropatellar osteoarthritis. There are multiple operating techniques, the ultimate goal of which is to have an anatomical reduction, an intraoperative trick to accomplish this, and early mobilization. It is the only guarantee of a good recovery of the function of the knee. The final objective of our study is to analyze and determine the epidemiological, anatomopathological, clinical, therapeutic characteristics as well as the evolution of patella fractures in our series and to compare with other studies published in the literature.

Methods

Our study is retrospective, made within the Orthopedic Trauma Service of the Moulay Ismail Military Hospital, over a period of 4 years spread from January 2014 to December 2018 in 22 cases. In this study, adult patients over the age of 18 were taken into service during the study period for a patella fracture and we excluded from this work any incomplete file or patient managed outside the study period. The data were collected from the files in the department's archives, with an average decline of 16 months.

Results :

The average age of our patients is 43 years with extremes from 16 to 81 years. There is a peak of 34% of the age group between 51 to 60 years with a male predominance (sex ratio M / F of 6.3) and on the left side. The traumatic circumstances were dominated by accidents on the public highway and the direct mechanism was observed in all cases. The signs noted in the patients in our series are: pain and functional impotence which are observed in all cases, the limb extension deficit is noted in 90% of cases, hemarthrosis in 81.81% of cases and skin opening in 2 cases, ie 9% of cases classified in stage 1 of the Cauchoix and Duparc classification. There have been no cases of vascular-nerve damage. Radiologically 12 of our patients had a stage 2 patella fracture according to the classification of SOFCOT (55% of cases). Orthopedic treatment was indicated in 2 cases (9%) and osteosynthesis dominated by tension band wiring in combination with 2 parallel k-wires (64%) (Fig 1) was installed in 20 patients (91). No patellectomy was indicated. In our series, we did not note any early complications, but we noted a case of a vicious callus: it was a displaced comminuted fracture treated by a

plugging of the shrouded strapping, one case of stiffness and two cases of osteoarthritis, ie 9% of the cases. (Fig 2).

II. Discussion

The patella is part of the patellar extensor apparatus of the knee and its intermediate subcutaneous position exposes it particularly to trauma. Patella fractures account for 0.5 to 1.7% of the skeletal injuries that every surgeon regularly faces. Patella fractures are not only joint fractures (except for tip fractures), but they are also fractures that can compromise the functional prognosis of the knee and therefore the socio-professional and sports future of the injured person, hence the benefit of good therapeutic behavior.

In our series the average age was 43 years which corresponds with the results of the series of gumula and haklar [1,2] who found respectively 43 and 42 years (Fig 3), so we deduce that the young active population is the most exposed to this type of fracture given the frequency of accidents on the public highway. With regard to sex, the predominance of men is reported by several works. The predominance of AVP noted in our series compared to falls from height and sports accidents is also observed in the other series, harry and Torchia [3,4], however in the series of klassen [5] it is the predominant falls. The predominance of the left side is consistent with the study by A.F. pailo and the study by Elnola, but in the literature we have not found any data or links between the fracture of the patella and the affected side. Polytrauma patients in our series represent 27% of cases: a percentage which is higher than those observed in the series by Fourati and, Ricard [6,7]; this is due to the predominance of AVP in our series. The predominance of transverse line fractures is consistent with the US study, while for UVARAJ [8,9] noted a predominance of comminuted fractures. The reduction of the fracture is a primordial time on which the functional result depends which we control thanks to an intraoperative trick by introducing the little finger to palpate the articular side of the patella to detect a stair step and possibly correct it before performing osteosynthesis. Surgical methods have evolved in their implementation and the results published in the literature are discordant and sometimes incomparable because the techniques used are very mixed [9]. Messoudi A. et al [10] report out of 24 cases of knee fractures treated surgically, that the tension band wiring was used in 64.17% of cases. However in the Hammami series [11], it is the peri-patellar banding which predominated, it was used in 62.15%. In our series, this technique was performed in 14 patients, or 64% of cases, while orthopedic treatment was indicated in 2 cases (9%).

The frequency of secondary infections has decreased with the progress of local, locoregional or free flap cover surgery in case of sagging skin. A superficial infection will be treated by local care, debridement and antibiotics generally adapted. There are no cases of infection or secondary displacement in our series, but the Hammami series and that of Hakoum [12] successively present 7.34% and 1.92% of secondary displacements. We also note the absence of pseudarthrosis in our series similar to the series of pailo and that of Torchia, while Mehdi found 4.5%. In our series there is only 1 case of knee stiffness, 4.5% of the cases which is close to the series of el sayad [13] and Uvaraj [14].

Osteoarthritis of the knee is the terminal complication to which the other complications converge, it is secondary to an incomplete reduction of the articular surface of the patella or a vicious articular callus of the patella, and also the magma patella which is the swelling of the patella following orthopedic or surgical treatment without tightening [15]. This creates an incongruence between the patella and the trochlea responsible for a rapid destruction of articular cartilage and femoro-patellar osteoarthritis. In our series on the results, 2 cases of osteoarthritis with a percentage of 4.5% which is lower than the Ricard series which presents 20% of cases of osteoarthritis and very close to that of Mehdi [16] who presents 8, 5%. Our results are classified according to the BOSMAN rating scale, which makes it possible to assess the function of the knee, to see the quality of the quadriceps and to look for stiffness (Fig 4). The overall results are classified according to the BOSMAN rating scale: 55% of the excellent results which is lower than Zakaria's study [17] which was found respectively 74% of the excellent results and higher than Mehdi 's study which was found respectively 28.5%, as well as 36% of the average results which is higher than the study by Zakaria which was found 9% of the good results and lower than the study by Mehdi which was found 40, 9% of the results, and 9% of the bad results which is higher than the results of Zakaria which found 7% of bad results but lower than the percentage of the results of the study of Mehdi which found 31.7%.

III. Conclusion :

Patella fractures are serious, as they affect the functional prognosis of the knee. Their frequency is 1% of all skeletal injuries. The diagnosis of these fractures is relatively simple, helped by x-rays of the knee, the use of CT is exceptional. The management of patella fractures depends on the type of fracture, the displacement of the fragments and the skin opening. The use of the tension band wire technique for patella fractures after ideally anatomical reduction is the gold standard technique, followed by guyed racking with strapping. Partial patellectomy should be offered when osteosynthesis does not allow a stable fitting to be obtained. Rehabilitation retains an essential place for a good functional result.

Références

- [1]. Haklar U and al Arthroscopic inspection after the surgical treatment of patella fracture International Orthopaedics (SICOT), 2008
- [2]. Gumula J, Wisniewski P, Kusiak A Evaluation of clinical and radiological results of operative treatment of patellar fractures Chir Narzadow Ruchu Ortop Pol, 2001, 66(5), 463-8
- [3]. Harry Sorensen K The late prognosis after fracture of the patella Acta Orthop Scand, 1964, 34, 198- 212
- [4]. Torchia M.E, Lewallen D.G Open Fractures of the Patella J Bone Joint Surg, 1996, 10(6), 403-409
- [5]. Klassen J.F, Trousdale R.T Treatment of Delayed and Nonunion of the Patella J Orthop Trauma, 1997, 11(3), 188-194
- [6]. M.K. FouratI (1), M. Dargouth (2) (1) Chirurgien, (2) Professeur, chef de service, Rééducation du genou après fracture de la rotule à propos de 354 cas. Hôpital Aziza Othmana, Centre de Traumatologie, Tunis, Tunisie.
- [7]. Ricard R, Moulay A Les fractures de la rotule Cahier d’enseignement de la SOFCOT, 1975, N°1, 75-91
- [8]. Us U.K, Kinik H Self locking tension band technique in transverse patellar fractures International orthopaedics (SICOT), 1996, 20, 357-358 .
- [9]. Ismaili H.I, Tamsamani R., Moulay A. Les fractures de la rotule opérées selon le procédé du hauban pré-rotulien Maroc médical 1999;21(24):291-8
- [10]. MESSOUDI A., MESSARY O., ELANDALOUSSI Y., RAHMI M., ARSSI M., COHEN D., TRAFEH M. Les fractures de la rotule à propos de 201 cas Service de traumatologie-orthopédie, p 32. CHU Ibn 113) S. KONE Thèse : Prise en charge des fractures de la rotule dans le CHU-GT en 2006 Roch, Casablanca.
- [11]. HAMMAMIA Résultat du traitement chirurgical des fractures de la rotule177cas, N° 2005.
- [12]. Hakoum J. Traitement chirurgical des fractures de la rotule. Thèse Méd. Casablanca 1993.n°353.
- [13]. EL-sayed AM.M, Ragab RK.I. Arthroscopic-assisted reduction and stabilization of transverse fractures of the patella. The Knee 2009;16(1):54-57.
- [14]. Harry Sorensen K The late prognosis after fracture of the patella Acta Orthop Scand, 1964, 34, 198-212
- [15]. Ricard R, Moulay A Les fractures de la rotule Cahier d’enseignement de la SOFCOT, 1975, N°1, 75-91
- [16]. Mehdi.M,Husson .JL,Polard .JL,Ouahmed.A,Poncer .R, Lombard .J Résultats du traitement des fractures de la rotule par haubanage prérotulien:analyse d’une série de 203 cas. Acta.ortho.Bel,1999,65,2.188-196.
- [17]. ZAKARIA These fracture de la rotule , UNIVERSITE CADI AYYAD FACULTE DE MEDECINE ET DE PHARMACIE MARRAKECH 2015.

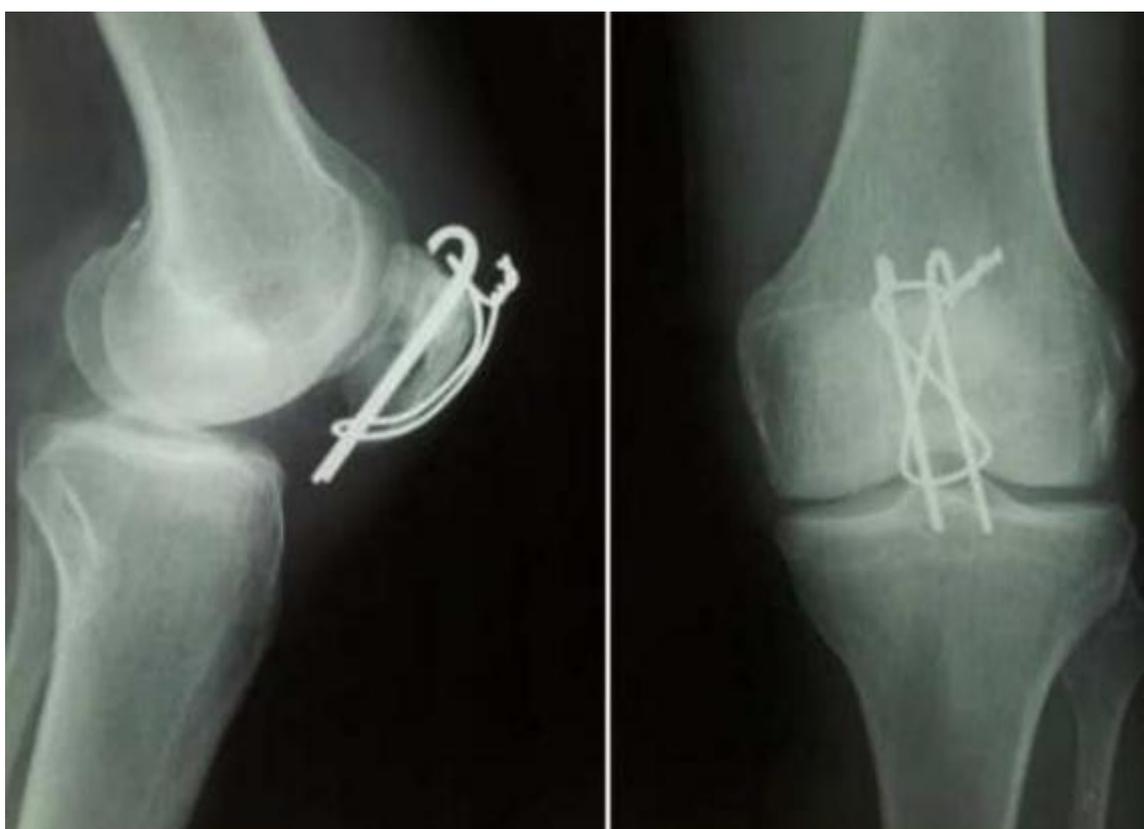


Fig 1 Knee X-ray : a patella fracture treated by tension band wirinig.

Fig 2 Number and percentage of complications in our series

Complications	Nombre de cas	Pourcentage
Immédiate	0	0 %
Cal vicieux	1	4,5 %
Pseudarthrose	0	0 %
Arthrose	2	9 %
Raideur	1	4,5 %

Fig 3 Average age and sex of patients according to studies

Auteurs	Age moyen (ans)	Sexe masculin	Sexe féminin
Haklar	42	67%	33%
Gumula	43	60%	40%
Harry	36	80%	20%
Notre série	43	86%	14%

Fig 4 Overall results of the treatment of patella fractures according to the authors.

Résultats	Zakaria	Mehdi	Notre série
Excellent	74%	28,5%	55%
Bon	9%	40,9%	36%
Moyen	20%		
Mauvais	7%	31,7%	9%

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