

SINGLE OR COMBINED MAQUET III OSTEOTOMY - LONG TERM RESULTS -

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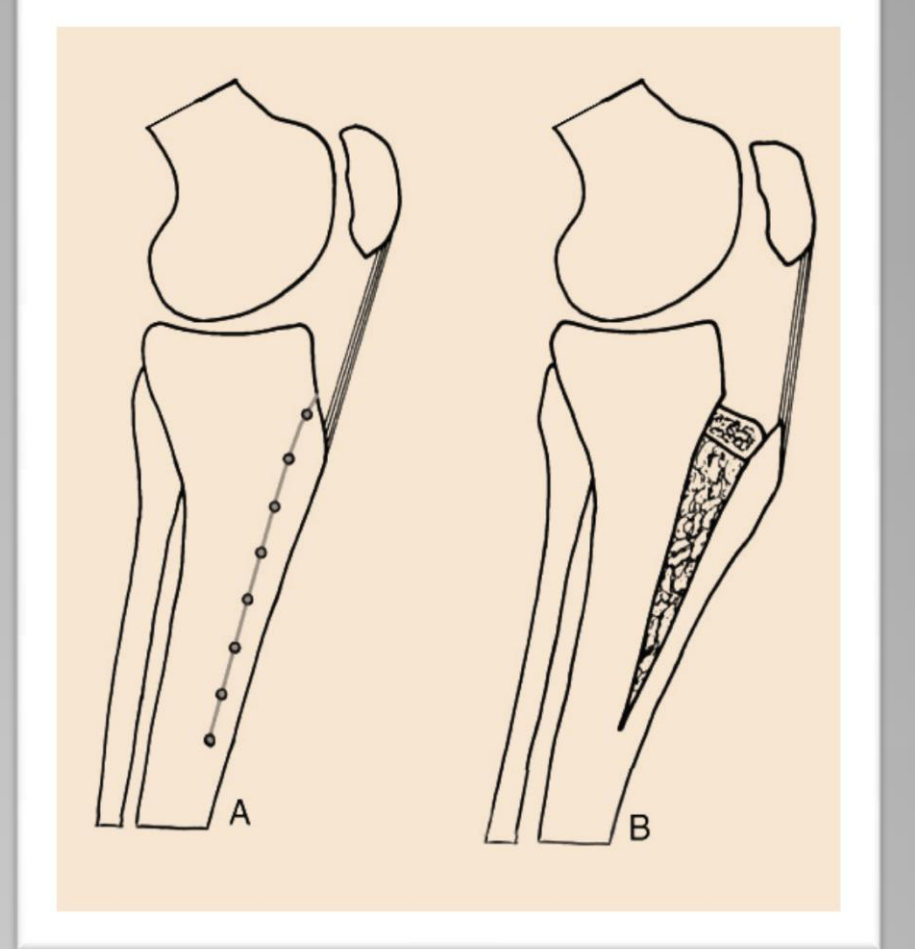
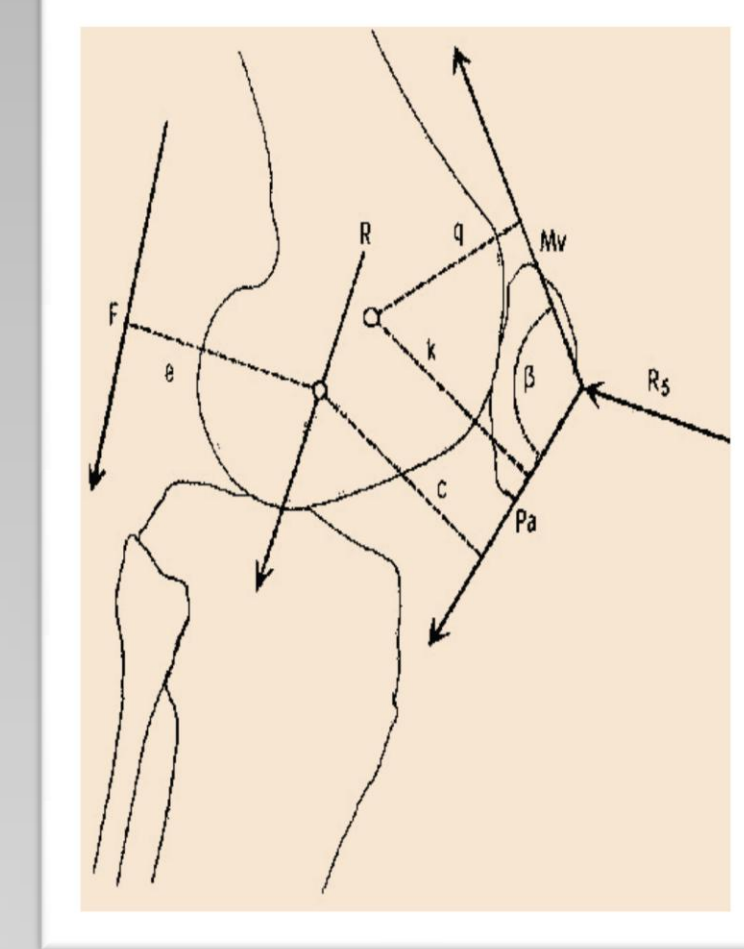


13th EFORT Congress 2012



INTRODUCTION

In 1963¹, based on biomechanics studies, Maquet proposed the advancement of the patellar tendon insertion as a mean of treating patellofemoral pain originated by osteoarthritis and/or chondromalacia. The rationale for this procedure was a reduction in the patellofemoral compression vector by changing the angular relationship between patellar tendon and quadriceps tendon, with the goal of pain relief, delay the evolution of osteoarthritis and maintain a full range of motion. An additional procedure of the Maquet effect on a malaligned knee was performing a cupuliform osteotomy above the tibial tuberosity (COATT).



OBJECTIVES

Evaluating, on a retrospective and comparative trial, the clinical and radiological long-term outcomes of the patients who underwent a single (M) or combined (MC) Maquet III osteotomy, in order to determine if this surgery as or not fulfill its initially objectives.

METHODS

All surgical records of our Orthopaedic Department, between 1970 and 1991, were reviewed. We identify 116 cases registered as "M" or "MC" Maquet III osteotomy.

A questionnaire as been prepared for collecting data and it has been completed by clinical record. We evaluated the pre and postoperative complications, range of motion and recovery time, as well as the postoperative pain absence period. All patients underwent an objective assessment by the Visual Analog Scale (VAS) at rest and activity and the Kujala Patellofemoral Scoring System (KPFSS) has been performed. A radiological assessment was also made in order to evaluate the arthritis and compartment affected, the Bicondylo-Patellar Angle (BPA) described by Delgado-Martins to measure patellar tilt and the Caton-Deschamps Index (CDI) to calculate the patellar height. Mann-Whitney, t-Student and Chi-Square tests were applied for statistical evaluation. $p < 0.05$ was considered statistically significant.

RESULTS

According to the study criteria, from the 116 selected patients we could review in our Department 49 Maquet III osteotomies (n= 25 "M" group vs n=24 "MC" group).



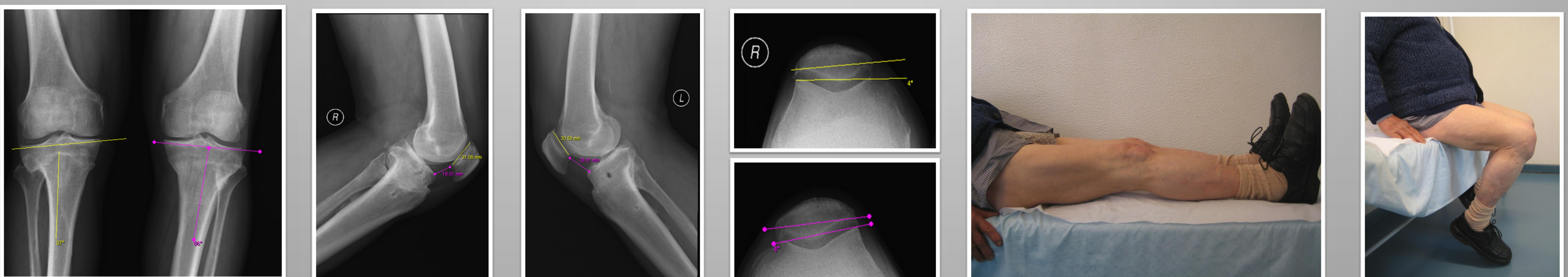
Surgical steps: Elevation of the ATT

	Single Maquet III	Combined Maquet III	p-value
Age at surgery (years)	37,6 ±12,0 [18-60]	56,5 ±6,8 [45-73]	
Postoperative follow-up (years)	27,1 ±3,15 [20-32]	23,2 ±3,4 [17-29]	
Post-op. complications	16,0% (n=4)	16,6% (n=4)	p = 0,763
Absence of pain since surgery until nowadays	40,0% (n=10)	38,5% (n=5)	p = 0,850
Period of pain absence (years)	20,5 ±5,7 [9-29]	11,0 ±1,7 [9-14]	p = 0,001
COX score – good to excellent outcomes	58,3% (n=14)	53,8% (n=7)	p = 0,793
Visual Analog Scale at rest	1,7 ±0,7 [1-3]	1,1 ±0,3 [1-2]	p = 0,016
Visual Analog Scale in activity	4,4 ±3,0 [1-9]	4,3 ±2,0 [1-8]	p = 0,883
Kujala Patellofemoral Scoring System	61,9 ±22,3 [25-100]	54,7 ±16,9 [29-91]	p = 0,364
Bicondylo-Patellar Angle (degrees)	6,3 ±3,9 [1-19]	11,8 ±3,9 [4-20]	p = 0,000
Caton-Deschamps Index	0,9 ±0,1 [0,5-1,2]	0,9 ±0,2 [0,7-1,2]	p = 0,990
Kellgren&Laurence grade I/II at patellofemoral joint	58,3% (n=14)	53,8% (n=7)	p = 0,793
Kellgren&Laurence grade I/II at femorotibial joint	79,2% (n=19)	46,2% (n=6)	p = 0,041

CASE 1: SINGLE MAQUET III OSTEOTOMY; MALE; 49 YEARS; 24 YEARS OF FOLLOW-UP



CASE 2: COMBINED MAQUET III OSTEOTOMY; MALE; 76 YEARS; 24 YEARS OF FOLLOW-UP ON THE RIGHT AND 22 ON LEFT KNEE



CONCLUSION

With a cut off follow-up superior to 20 years both groups presented a free pain period superior to 9 years. The Maquet III group presented 58,3% of good to excellent outcomes with patients presenting a majority of low grade osteoarthritic knee. The COATT procedure hasn't increased the postoperative complications nor worsen the functional outcomes. On the other side, the femorotibial grade of arthritis was higher on this group.