

CLINICAL AND RADIOLOGICAL OUTCOMES IN PATIENTS AFTER TROCHLEOPLASTY AND MEDIAL PATELLO-FEMORAL LIGAMENT RECONSTRUCTION WITH A MINIMUM 2 YEAR FOLLOW-UP

Lara Pozzi¹, Peter Brem², Michel Schläppi¹, Samuel Blatter¹, Christoph Metzler³, Simon Rauch³, Peter Koch¹, Jean-Romain Delaloye¹

¹ Division of Orthopaedics and Traumatology, Cantonal Hospital Winterthur, Winterthur, Switzerland

² Department of Physiotherapy, Cantonal Hospital Winterthur, Winterthur, Switzerland

³ Division of Radiology, Cantonal Hospital Winterthur, Winterthur, Switzerland

Introduction

Trochlear dysplasia is a common risk factor predisposing to recurrent patellar dislocations (1). This pathological morphology leads to a lack of congruence with the patella that occasionally needs to be surgically corrected by deepening the trochlear bone underneath the cartilage, the so-called trochleoplasty (2). The aim of our study was to evaluate the clinical and radiological outcomes after combined trochleoplasty and medial patello-femoral ligament (MPFL) reconstruction in patients with a minimum two-year follow-up.

Material and Methods

Patients who underwent a combined trochleoplasty and MPFL reconstruction in our institution between January 2014 and July 2018 were included in the study. Clinical and radiological assessment was performed by an orthopaedic surgeon and a physiotherapist at a minimum of two years after the operation. Clinical and functional outcomes were evaluated by scores (Kujala, Tegner, and IKDC score) and physical tests including side hop test and maximal isometric strength measurement of the thigh muscles.

Radiological studies included pre- and postoperative radiographs and MRI of the operated knee (figure 1).

Wilcoxon test was used for comparison of numeric values. Fisher's exact test was used for comparison of frequencies.

Results

Twenty-seven patients were included in the study, of whom 23 (24 knees) achieved clinical and radiological assessment (table 1).

At a median follow-up of 2.5 years (range 2.0 to 5.5 years), no patient experienced recurrent patellar dislocation. Median postoperative Tegner, Kujala, and IKDC subjective score were 4 (range 1 to 8), 88 (range 67 to 100), and 77 (range 49 to 98), respectively.

Maximal isometric quadriceps and hamstring strength of the operated leg was significantly lower than of the contralateral side (figure 2). Side hop test of the operated leg was also significantly lower than of the contralateral side ($p = 0.03$).

Postoperative MRI did not show any chondrolysis or subchondral necrosis. However, chondropathy was significantly increased on both patellar and trochlear side compared to preoperative state (table 2).

Conclusion

Combined trochleoplasty and MPFL reconstruction is an efficient treatment for patellar instability in patients with high grade trochlear dysplasia. However, significant functional deficit of the operated leg was still present at a minimum of two years after the operation. Furthermore, postoperative MRI demonstrated significant cartilage deterioration of the patella and trochlear groove.

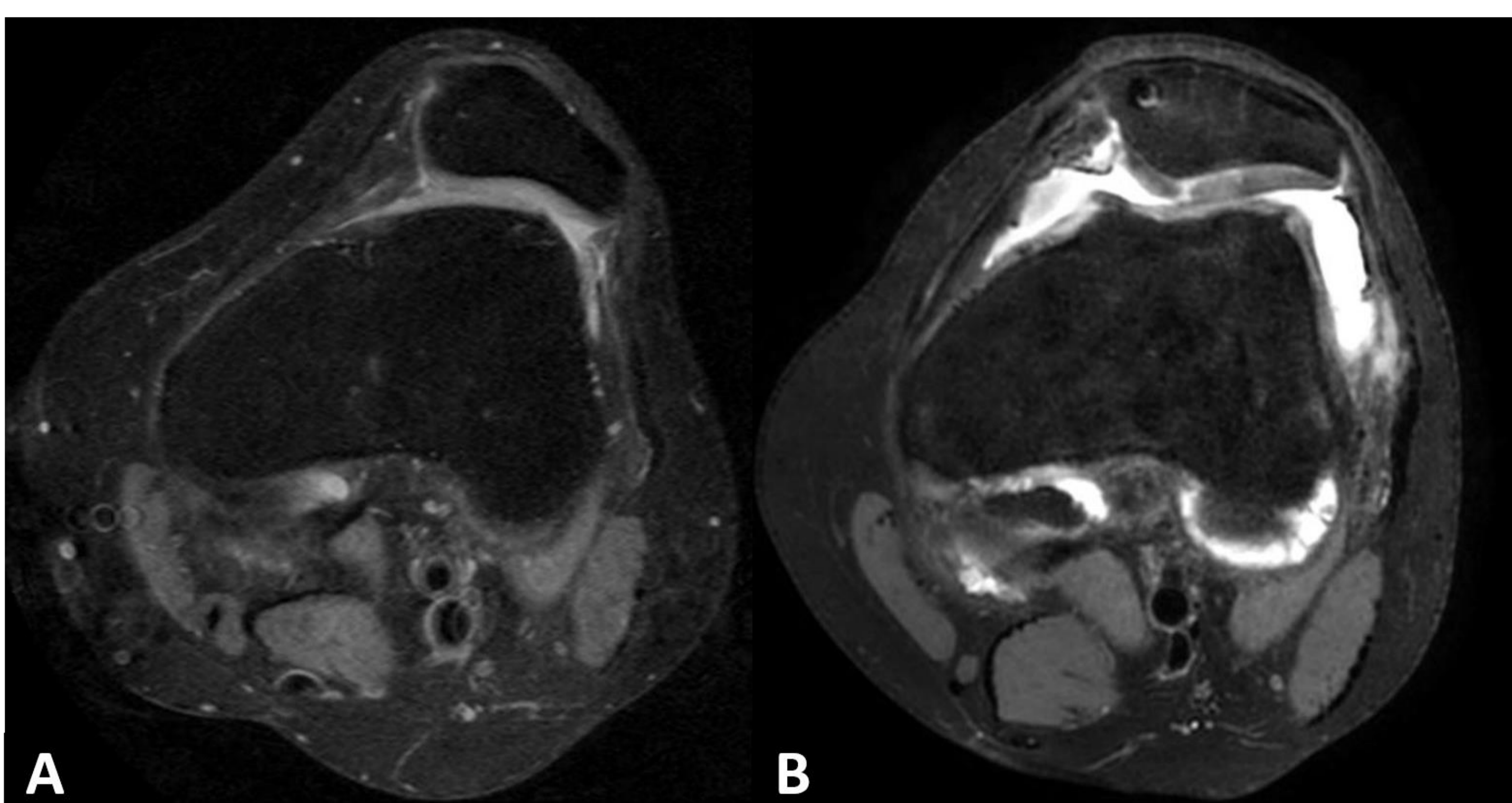


Figure 1. Preoperative (A) and postoperative (B) axial MRI showing degradation of the cartilage under the patella and in the trochlear groove.

	(n=24)
Follow-up [y]: median (range)	2.5 (2.0 - 5.5)
Sex [female]: n (%)	17 (70.8)
Age at operation [y]: median (range)	18 (13 - 47)
BMI [kg/m ²]: median (range)	21.9 (16.5 - 46.1)
Trochlear dysplasia type D [Dejour]: n (%)	19 (79.2)
Positive preoperative apprehension test: n (%)	19 (79.2)
Bilateral trochleoplasty: n (%)	1 (4.2)

Table 1. Patient characteristics

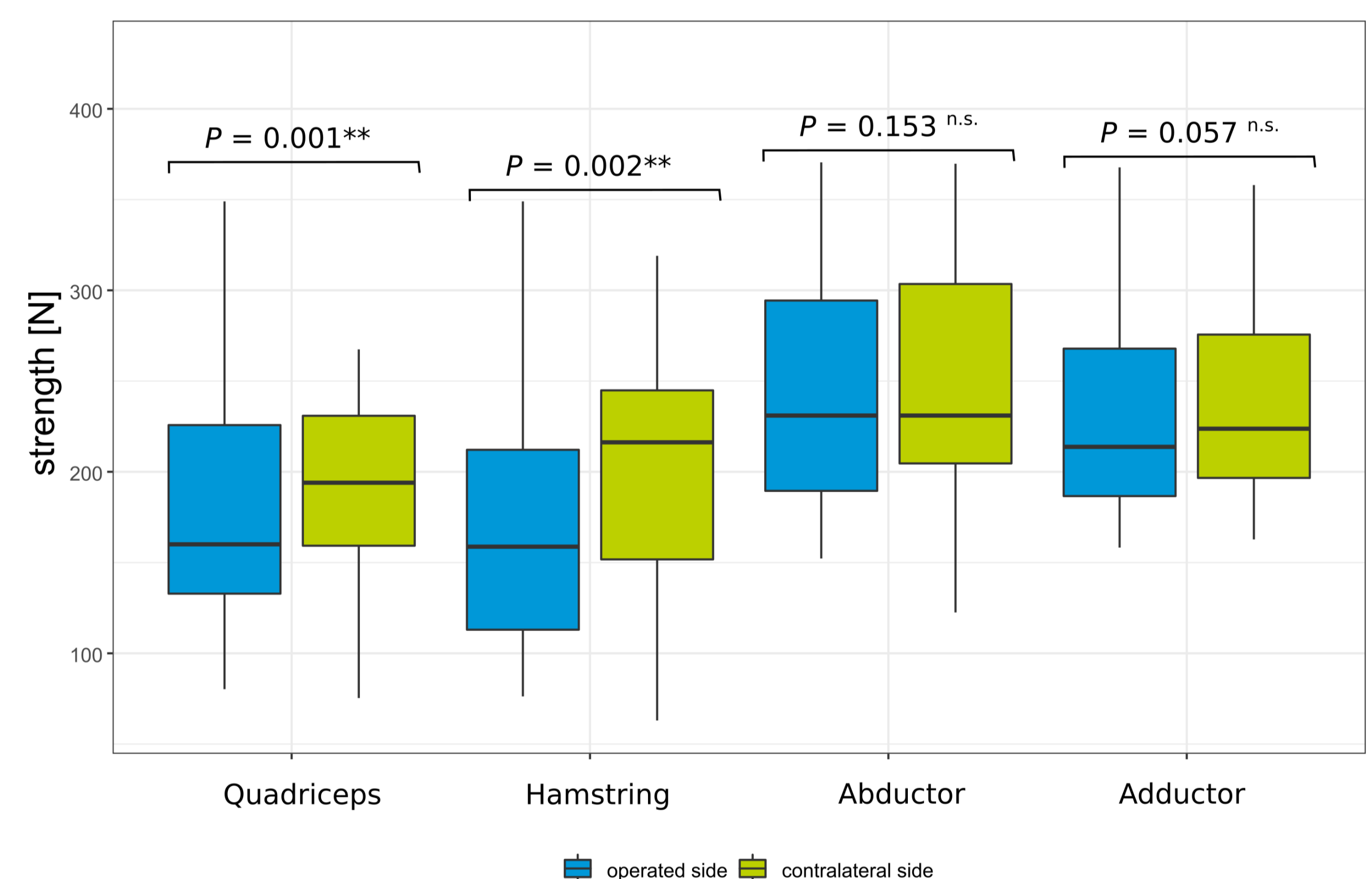


Figure 2. Boxplot diagrams showing the maximal isometric strength measurements [N] of the operated (blue) and contralateral leg (green), respectively.

	Median preoperative (range)	Median postoperative (range)	p-value
Caton-Deschamps index:	1.11 (0.76 - 1.45)	0.91 (0.74 - 1.27)	< 0.01
TTGT [mm]:	20.5 (12.6 - 30.0)	18.4 (9.6 - 26.6)	0.097
Chondropathy [Outerbridge]:			
Patella medial facet	0 (0 - 4)	0 (0 - 4)	0.167
Patella central	0 (0 - 4)	2 (0 - 4)	0.047
Patella lateral facet	0 (0 - 4)	0 (0 - 4)	0.776
Trochlea medial	0 (0 - 0)	0 (0 - 4)	0.057
Trochlea central	0 (0 - 0)	0 (0 - 3)	0.019
Trochlea lateral	0 (0 - 4)	0 (0 - 4)	0.032
Chondrolysis: n	0	0	
Subchondral necrosis: n	0	0	

Table 2. Radiological results. Evaluations were performed on MRI except for the Caton-Deschamps Index that was determined on radiographies.

References

- Dejour H, Walch G, Nove-Josserand L, Guier C. Factors of patellar instability: an anatomic radiographic study. *Knee Surg, Sports Traumatol, Arthroscopy* 1994;2:19-26.
- Bereiter H, Gautier E. Die Trochleoplastik als Chirurgische Therapie der Rezidivierenden Patellaluxation bei Trochleadysplasie. *Arthroscopie* 1994;7:281-286.3