The five-year MRI follow-up data after mini-open lateral approach trochleoplasty is presented. Methods From January 2010 to December 2016, 109 patients underwent a mini-open lateral approach trochleoplasty combined with medial patellofemoral ligament (MPFL) reconstruction for the diagnosis of recurrent lateral patellar dislocation. Additionally, if no overlapping of patellar and trochlear cartilage was present intraoperatively, indicating abnormal patello-trochlear index, distalizing tibial tubercle osteotomy (DTTO) was performed to correct patellar height. Demographics and presence of MRI variables included ages at time of surgery, degree of trochlear dysplasia, sulcus depth, sulcus angle, lateral inclination angle, condylar height and patello-trochlear index. Thirty patients underwent a control MRI assessment of post-operative trochlear status at a minimum 5 year post-operatively. Results Mean age at the time of surgery was 16.9 years (SD 4.63). Majority of the patients were females (23/30, 77%). In follow-up MRI’s, at minimum 5 year post-operatively (range 5 to 8 years), no significant cartilage lesions such as delamination or avascular necrosis were seen. The articulating cartilage at the region where trochleoplasty was performed did not reveal any greater than ICRS grade I cartilage deterioration in control MRI and in majority of the knees (21/30, 70%), no changes were detected. The most common post-operative trochlear shape was somewhat shallow, graded as type A according to Dejour classification - all study patients with grade B and D dysplasia with bump deformity were corrected to normal shaped or grade A trochlea. The preoperative sulcus depth was mean 1.3mm (SD 0.93) and post-operatively mean 3.9mm (SD 1.20). Sulcus angle improved from preoperative mean 162° (SD 9.72) to post-operative mean 149° (SD 5.14) and lateral trochlear inclination angle changed from preoperative mean ± 4° (SD 3.92) to post-operative mean ± 3° (SD 1.38). Trochleoplasties combined with additional DTTO (9/30, 30%) were not associated with increased cartilage lesion deterioration. Preoperatively, 83% of patients (25/30) had some articular cartilage damage on the patella, primarily on the medial facet of the patella. Patellar lesions remained comparable with pre-operative status at 5-year follow-up MRI. Conclusion Trochleoplasty is a safe procedure – in a minimum 5 year MRI follow-up, none had significant cartilage lesions such as delamination or avascular necrosis. Trochlea dysplasia can be corrected to normal or nearly normal trochlea with mini-open lateral approach trochleoplasty, based on post operative MRI analysis. Satisfying subjective long-term outcome can be expected for trochleoplasty.