Modified Judet Quadricepsplasty for post traumatic knee stiffness

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INTRODUCTION

Knee stiffness is a common condition following polytrauma, high-energy injuries or surgery.
There are several risk factors related to the development of arthrofibrosis leading to severe functional and joint range limitation. Crucial is the postoperative rehabilitation timing and protocol where, if excessively delayed or ineffectively performed, can bring to development of this debilitating clinical condition.
The first approach is conservative, aimed at more effective and aggressive physiotherapy supplemented by pharmacological therapy. In several studies, although there is no consensus on the timing, it is suggested that within three months of surgery and the consequent onset of joint stiffness, an approach using manipulation under anesthesia may be attempted, although the practice is gradually falling into disuse. If conservative approaches do not yield the desired benefits, there is indication for surgical intervention.
It can be by arthrolysis if the origin is intraarticular or by Quadricepsplasty if predominantly extrarticular.
We describe our surgical technique, which is a modification of the original Quadricepsplasty technique proposed by Robert and Jean Judet in 1956, which is different mainly for the single intra and extrarticular lateral access, the origin of the vastus lateralis and rectus femoris sparing and a fascial plane plastic of the thight performing by shifting the two flaps.
This video shows a clinical case of a 32-year-old man in the field of internal synthesis for comminuted fracture of the distal femur after a motorcycle crash polytrauma treated with modified Judet Quadricepsplasty for a stiff knee. It also discusses the clinical outcome (ROM and score) of a sample of 19 patients undergoing modified Judet Quadricepsplasty for post-traumatic stiff knee evaluated as part of a retrospective and prospective observational single center study.

MATERIALS AND METHODS

A total of 19 patients underwent modified Judet Quadricepsplasty between June 2008 and April 2023 at the institution of the authors of this video. The average follow-up was 10 years. Demographic and clinical parameters were retrospectively collected from hospital records. In outpatient follow up we recorded knee ROM, clinical score and postoperative complications.

RESULTS

The patient's average age was 34.5 years at the time of surgery (range, 19 to 46 years). We had in our sample 17 male (89.5%) and 2 female (10.5%).
The extrarticular distal femoral fracture was the most common trauma cause recorded in 11 patients (57.9%) and in 9 patients (47.4%) the fracture was with exposure.
Trauma treatment was mainly ORIF in 19 cases (79.2%). The average time between trauma and Judet arthromiolysis was 34 months (range 5-199) and for 11 patients Judet was the first treatment for knee stiffness.
Average preoperative knee flexion was 50.26°, intraoperative flexion 113.16°, at one month after surgery 87.89°, at last outpatient follow-up 100.68°. We recorded an average knee flexion gain of about 62.89° between pre and intraoperative; knee flexion gain of about 50.42° between preoperative and last follow up; knee flexion loss about 12.48° between intraoperative and last follow-up.
9 patients showed a slight extension lag at last clinical follow-up, (range 2-20°).
The average clinical score according to WOMAC score was 19.5% (range 0-69.8%), HSS knee score 81.7 (range 64.9-97), KOOS score 60.5% (range 22-87%), Tegner Lysholm score 73.7% (range 31-100%).
The results according to Judet's criteria were Excellent in 10 patients, Good in 7, Fair and Poor 1 respectively.
There was 1 intraoperative complication: patellar tendon detachment treated with double metal cerclage synthesis.
Postoperative complications were recorded in 5 patients and were 1 chronic osteomyelitis, 2 infections, 1 hematoma and 1 bleeding.
4 cases needed a new arthromyolysis after modified Judet Quadricepsplasty in order to achieve optimal flexion recovery.

CONCLUSION

The results of the study are promising. The modified Judet Quadricepsplasty is an effective and safe procedure, however, need experienced surgeons to be made.
Moreover it is less invasive compared to standard Judet technique.
Clinical results in term of articularity achieved are maintained over long term.
Also clinical score showed good results.

The results recorded must be placed in the complex anamnestic and clinical context of each individual patient characterized by multitrauma and high energy injuries outcomes that have certainly made functional recovery more complex.