ACL Reconstruction With Quadriceps Tendon Autografts Provides Pre-Injury-Level Functional Outcome and No Deterioration of Osteoarthritic Grade in Patients Aged 50 Years or Older: A 5-Year Follow-Up

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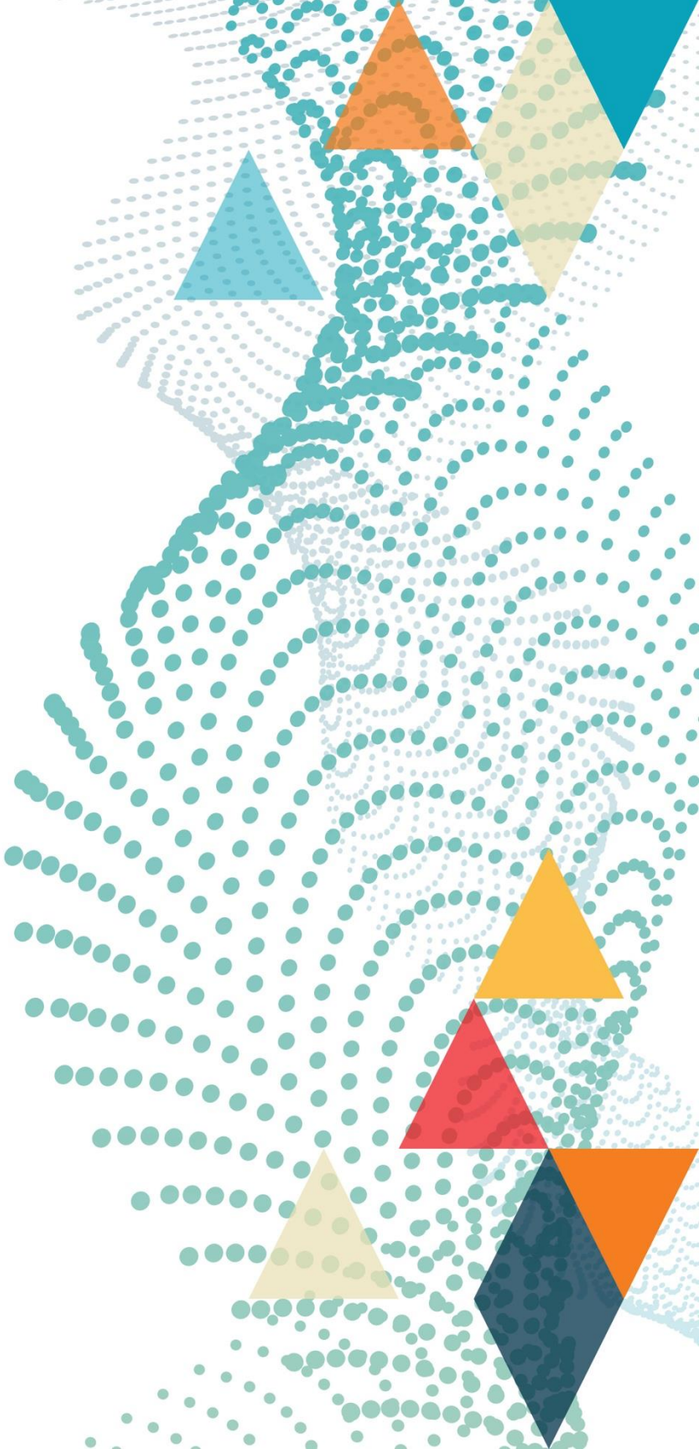
Disclosure

Nothing to disclose



Background

- Conservative management of ACL injuries in the elderly active population may result in persistent instability, and this can predispose strongly to meniscal damage and cartilage degeneration.

- With the availability of better instrumentation and advances in surgical techniques, ACLR has been performed even in patients older than 60 years of age with good results, with the restoration of anterior knee stability and resumption of pre-injury activity.

- Quadriceps tendon (QT) is emerging as an alternative due to biomechanical advantages and lower donor site morbidity.

Purpose/ Hypothesis

- **Purpose**: To assess patient-reported functional outcomes (PROMs), knee stability, quadriceps rupture, graft failure rates, and sports participation after anterior cruciate ligament reconstruction (ACLR) with quadriceps tendon (QT) autograft in patients aged 50 years or older.

- **Hypothesis**: ACLR with QT autograft in highly active older patients would provide satisfactory PROMs and return to sports with no worsening of osteoarthritic grade.

Methodology

- **Inclusion**:
  - Primary ACLR using QT autograft,
  - age ≥ 50 years.
- **Exclusion**:
  - Revision ACL,
  - utilisation of graft tissue other than QT autograft,
  - contralateral knee injuries,
  - osteoarthritis (Kellgren Lawrence ≥ 2).

Methodology

- A minimally invasive technique was used for QT autograft harvesting.
- Patients were evaluated at pre-injury, 2-year, and 5-year follow-ups for:
  - Lysholm knee score, Tegner activity level, VAS for pain
  - Knee stability (Lachman and pivot shift test)
  - Quadriceps tendon rupture, Graft failure
  - Sports participation

Results

- Total patients: 29.
- Mean age at the time of surgery: 54 ± 5.4 years (range 50-67).
- Female: 52% (15 patients); Male: 48% (14 patients).
- PROMs (Lysholm knee score, Tegner activity level, VAS) and knee stability improved to pre-injury level, and no significant difference was found between pre-injury and 5-year follow-up for Lysholm, Tegner, and VAS scores ($p > 0.05$).

Results..

- No significant worsening of osteoarthritic grade between baseline and final follow-up ($p > 0.05$).
- No incident of quadriceps tendon rupture, graft failure, or patellar fracture was reported.
- At a 5-year follow-up, patients achieved pre-injury level sports participation ($p > 0.05$).

Limitations

- Study focused PROM’s and there were no objective scores.
- Small sample size leads to limited and underpowered statistical analysis.

Conclusion

- ACL reconstruction with quadriceps tendon autografts provides pre-injury-level functional outcome and no deterioration of osteoarthritic grade in patients aged 50 years or older.

- The use of QT autograft in these highly active elderly patients is a safe and feasible procedure.

References

- **Fayard J-M et al. (2019)** *Factors affecting outcome of ACL reconstruction in over-50-year-olds. Orthop Traumatol Surg Res. 105:S247–S251.*
- **Iorio R et al. (2018)** *ACL reconstruction in patients >50 years: a comparison with younger group. Int Orthop. 42:1043–1049.*
- **Panisset J-C et al. (2019)** *ACL reconstruction in over-50: Comparative study with under-40s. Orthop Traumatol Surg Res. 105:S259–S265.*
- **Ovigue J et al. (2020)** *ACL reconstruction is reliable in patients >50 years. Knee Surg Sports Traumatol Arthrosc. 28:3686–3693.*
- **Toanen C et al. (2017)** *Is there benefit in ACL reconstruction in patients >60? Am J Sports Med. 45:832–837.*
- **Runer A et al. (2018)** *Quadriceps vs. hamstring tendon autografts in ACLR: 2-year outcomes. Knee Surg Sports Traumatol Arthrosc. 26:605–614.*
- **Crum RJ et al. (2021)** *Bone vs. all-soft-tissue quadriceps tendon autografts: Systematic review. Arthroscopy. 37:1040–1052.*
- **Winkler PW et al. (2022)** *Quadriceps tendon autograft gaining popularity in revision ACLR. Knee Surg Sports Traumatol Arthrosc. 30:149–160.*
- **Fink C et al. (2018)** *Minimally invasive quadriceps tendon ACLR technique. Arthroscopy Tech. 7:e1045–e1056.*
- **Wierer G et al. (2017)** *High return-to-activity rates after ACLR in >40 years: Systematic review. J ISAKOS. 2:200–204.*