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PLATELET RICH PLASMA IN ACCELERATED ACHILLES TENDON REGENERATION: A RANDOMIZED CONTROLLED TRIAL

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Purpose

Platelet Rich Plasma (PRP) has been shown to have positive effect in tendon regeneration in in-vitro and limited in-vivo animal studies. We aim to study PRP use in acute Achilles tendon rupture (ATR) regeneration in a purposely designed clinical trial.

Methods

This is a prospective double-arm patient-blinded randomized controlled trial. ATR patients were randomized into PRP treatment or control groups. Non-operatively treated patients received PRP or control injection in clinic. In operatively treated patients, PRP gel was applied in the ruptured gap during percutaneous repair. Standard rehabilitation protocol was used and patients were followed up for 24 weeks. ATR, VISA-A and FAOS scores were used as subjective outcome measures. Functional ultrasound Elastography (FUSE) was performed at each follow-up to assess the mechanical properties of tendons. PRP analysis and tendon needle-biopsy were performed to study the histological differences during healing in both groups.

Results

20 patients were recruited with mean age 37.5 ± 8.8 (8 males and 7 females). Rupture location was 4.8 ± 2.1 cm from insertion. PRP platelet count $1044 \pm 320 \times 1000/\mu\text{L}$ with average platelet CD62p activation $68.42 \pm 4.5\%$. Mixed linear regression analysis revealed PRP treated tendon achieved better ATR and VISA-A outcome scores ($p < 0.05$). FAOS score analysis showed that PRP group had better pain, ADL and symptoms scores with significant difference apparent from week 3 onwards. Strain mapping using FUSE scan in 4 patients showed bigger harder tendons in PRP group. Analysis of the remaining patients is on the way. To achieve the desired statistical power in pragmatic settings, recruitment will continue in a multi-centre trial.

Conclusion

Our preliminary findings show that PRP application in Achilles tendon rupture may lead to faster regeneration and return to function as supported by a combination of objective and subjective outcome measures.

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