Are ligaments superior to tendons in reconstruction of injured ligaments in the hand? - A Systematic review.

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Introduction

- Ligament reconstruction of the hand and wrist is a daunting process that often results in suboptimal outcomes.
- In the current literature, there is no consensus of using tendons vs. ligaments as a graft source.

Methods

- A PubMed search was performed to find relevant articles exploring the properties of tendons and ligaments.
- Due to the paucity of articles discussing tendons and ligaments in the hands, wrist and upper limbs, articles discussing lower limbs were also included.

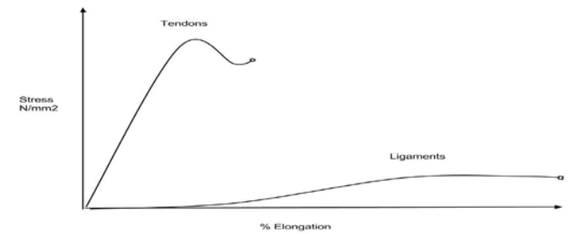
Table

	DNA Content	Total Collagen	Type III Collagen	Reducible Collagen Cross-links	GAG content	Stiffness	Stress to Rupture	Crimp Frequency	Crimp Length	SMA myofibroblasts
Tendon	+	+++	+	+	+	+++	+++	+	+++	+
Ligament	+++	+	+++	+++	+++	+	+	+++	+	+++

Results

- Tendons were found to have a stiffer structure whereas ligaments have a more elastic structure to allow for movement between bones.
- Ligaments have a narrower crimp distance, ovoid cells, and a higher concentration of alpha smooth muscle associated with higher elasticity and tolerated strain.
- It has been shown that tendons undergo “ligamentization” when used to reconstruct ligaments.
- However, even after tendon remodelling, important differences still persist, never reaching the functional status of the intact ligament.

Figure



Conclusion

- Long-term adverse outcomes after ligament reconstruction include decreased strength, mobility and graft rupture. The findings of this study reveal a theoretical advantage of using ligament grafts over tendon grafts to reconstruct injured ligaments.
- Further clinical studies are needed to explore the long-term outcomes with direct comparison between the use of tendon and ligament.