## TENDOCICS A Novel Surgical Space Expansion System for Arthroscopic Biceps Tenodesis

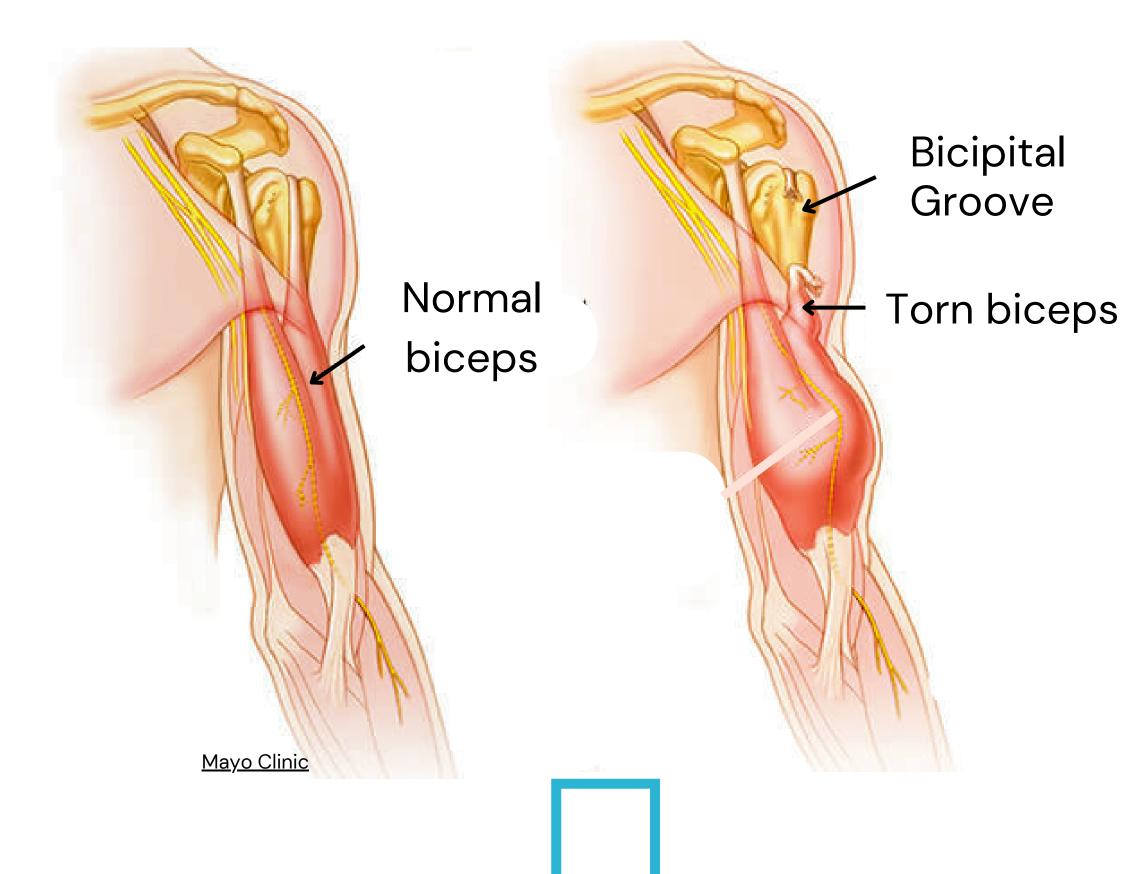


JOHNS HOPKINS BIOMEDICAL ENGINEERING

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## **Clinical Problem**

**Biceps tendonitis** involves the swelling and inflammation of a tendon in the arm, causing pain, swelling, and limited movement.



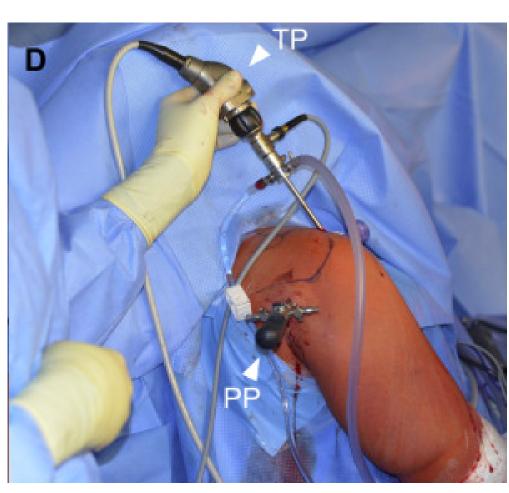
In serious cases, **biceps tenodesis** (BT) surgery is needed in which the damaged part of the tendon is removed and the healthy part is reattached to the humerus.

**Smaller Incision** 

Less Scarring

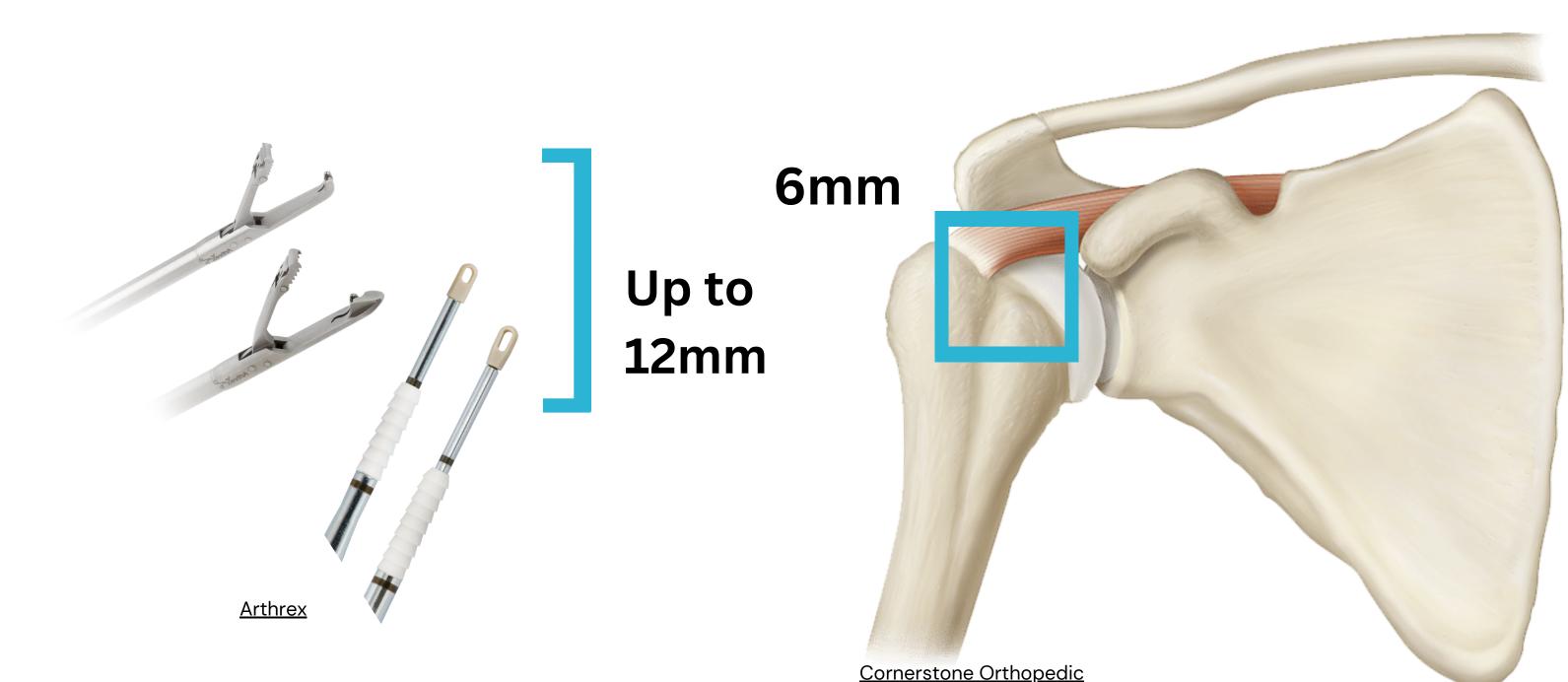
Quicker Recovery

## **Arthroscopic BT**



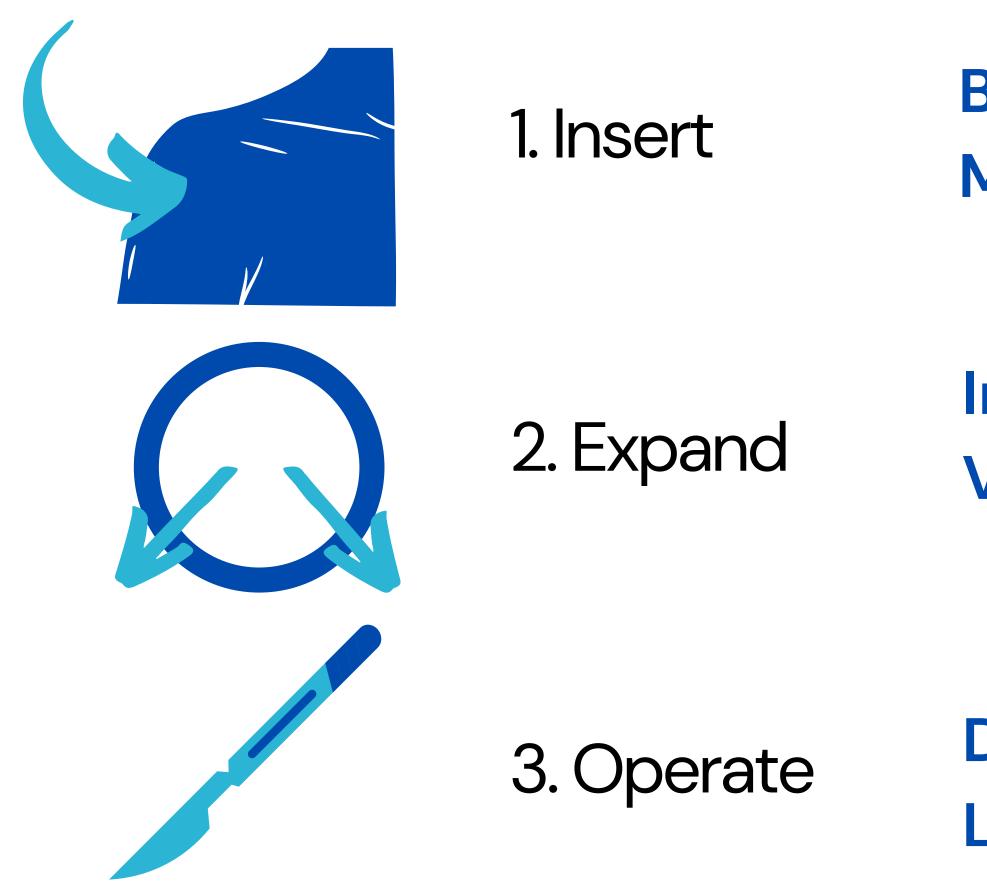
Arthroscopy Techniques

## Tight Surgical Space + Bulky Tools = Low Adoption of Arthroscopic BT



# the tendon in the subdeltoid space.

## **Our 3 Step Approach**



### Acknowledgements:

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1. Mayo Foundation for Medical Education and Research. (2020, December 10). Biceps tendonitis – Mayo Clinic orthopedics & sports medicine. Mayo Clinic. https://sportsmedicine.mayoclinic.org/condition/biceps-tendinitis/ 2. Maier, D. et al. (2016). Tenoscopic Suprapectoral Biceps Tenodesis. Arthroscopy Techniques. Volume 5 (Issue 1). https://www.arthroscopytechniques.org/article/S2212-6287%2815%2900154-1/fulltext 3. GPS shoulder replacement. Cornerstone Orthopedic Institute. (2020, September 30). https://cornerstoneorthopedic.com/gps-shoulder-replacement/

4. Helping surgeons treat their patients better<sup>®</sup>. Arthrex. (n.d.). https://www.arthrex.com/

Surgeons often invest significant time in adjusting tools, even resorting to smaller tools designed for other procedures, in an effort to enhance visualization and maneuverability within the surgical space.

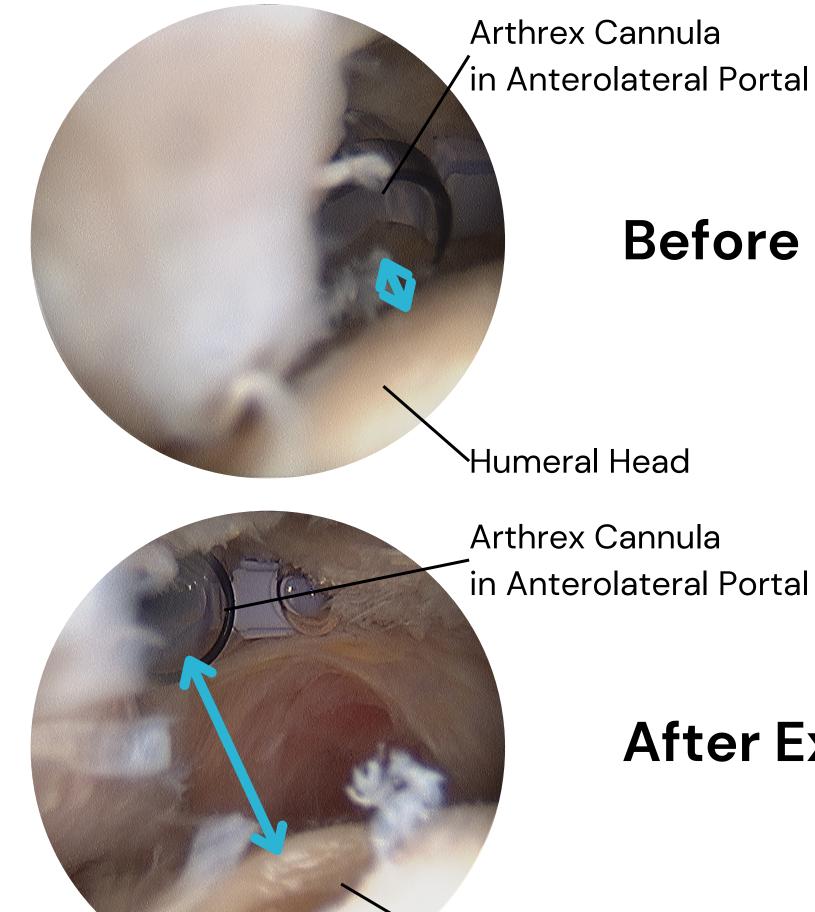
Orthopedic surgeons need an arthroscopic biceps tenodesis system that increases the surgical space in order to improve visualization and access to

> Better Maneuverability

Increased Visualization

Decreased Learning Curve

ABT requires between **18–21 N of** force to create enough operating space. These images were taken in a cadaver shoulder by pulling back on the tissue externally.



Arthroscopic View

## **Before Expansion**

## After Expansion

Humeral Head