10 x 10: Extensor Tendon Injuries: More Than Just the Mallet

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Kelly Huang

Anatomy:

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| **Zone** | **Area** | **Structure injured** | **Deformity** |
| I | DIP joint | Terminal tendon | Mallet |
| II | Middle phalanx | Lateral slips | Mallet |
| III | PIP joint | Central slip | Boutonnière |
| IV | Prox phalanx | Central slip |  |
| V | MCP joint | EIP | Fight bite |
| VI | Metacarpals | EDC |  |
| VII | Retinaculum |  |  |

Assessment:

* Physical exam:
	+ Neurovascular check first – fine touch, pin prick, +/- two point discrimination
	+ Then immediately ring block so rest of physical exam is reliable
	+ Check active ROM against slight resistance
		- If able to – partial laceration – no need for repair
		- If unable to ROM against resistance – full laceration – needs repair
* Elson’s test
	+ Restrict PIP joint to 90 degree flexion
	+ Assess active extension against slight resistance
	+ If distal phalanx remains soft, then it is normal
	+ Checks central slip injury – if central slip is fully lacerated, distal phlanx would be firm or they would be unable to extend

Management

* Zone 1 – 3 should be repaired by plastics
* Zone 4 – 7 can be repaired by EPs
* Partial (<50%) laceration – conservative management, splint x 4 -6 weeks
* Full (>50%) laceration – core sutures and splint 6 – 8 weeks
* Everyone needs a volar slab in full extension and sent to hand clinic
* Core suturing – modified Kestler 🡪 [youtube video](https://www.youtube.com/watch?v=UU5wd1SJfLI&feature=emb_logo) starting at 4:56
	+ The tendon has many rope-like strands and therefore simple interrupted stitches would not hold against tension
	+ Big bites! ~ 1cm on each stump
	+ Non absorbable sutures – ethilon, nylon, as large as the tendon can tolerate, usually 3-0

Specific Injuries:

* Mallet: if closed, splint DIP (leaving PIP and MCP free) and send to hand clinic
* Boutonniere: splint PIP (leaving DIP and MCP free) and send to hand clinic
* Fight bite: suspect in everyone with zone 5 lacerations!
	+ 25% get infected, needs irrigation and exploration, call plastics!
	+ Amox clav for strep/staph coverage, do not close the skin