

Screw Basics - AO Fixation

- **Screw parameters/anatomy**

- Core diameter - determines the drill size needed for the underdrill (pilot hole)
- Outside diameter - includes the diameter of the core + the threads
- Screw length - measured from the top of the head to the tip
- Pitch-length screw travels with each 360-degree turn
 - larger for cancellous screws, and shorter for cortical screws
- Head of the screw
 - permits attachment of the screwdriver
 - Arrests the forward motion of the screw as it meets the bone
 - Provides consistent and even pressure at the contact surface of the head and bone
 - Some screws have a threaded head - which allows the screw to lock into a locking plate
- Run-out of the screw - the weakest part of the screw where the threads meet the core of the screw (needs to be placed away from the fracture or fusion site)
- Tips - 3 major types
 - Standard - requires pre-drilling and then tapping
 - self-tapping - needs pre-drilling only
 - self-drilling - doesn't need any preparation of the bone before screw placement

- **Cannulated screws** - screw is introduced over a guide wire that is inserted before the screw insertion

- **Lag screw principle**

- Threads of the screw must only purchase the far cortex to create interfragmentary compression
 - A glide hole (overdrill) is placed in the near cortex
 - The washer may be used to spread the load applied to the head of the screw to the underlying cortex (protects bones with a thin cortex)
- Partially threaded screws provide interfragmentary compression by design

- **Screw insertion technique** to achieve interfragmentary compression with a fully threaded screw

- Overdrill, Underdrill, countersink, measure, tap, screw