SCREW BASICS 101

THE DIFFERENCES BETWEEN ORTHOPEDIC SCREWS
BASIC DIFFERENCES

• Cortical vs Cancellous
• Partial Thread vs Full Thread
• Self Tapping vs Non Self Tapping
• Solid vs Cannulated
• Locking vs Non Locking
• Stainless Steel vs Titanium
Bone Anatomy

Proximal epiphysis
Articular cartilage
Epiphyseal line
Periosteum
Compact bone
Medullary cavity

Diaphysis

Distal epiphysis

Spongy bone
Compact bone
Articular cartilage
Endosteum
Yellow bone marrow
Compact bone
Periosteum
Perforating (Sharpey’s) fibers
Nutrient arteries
Basic Screw Anatomy

- Thread Length
- Screw Tip
- Core Diameter
- Pitch
- Thread Runout
- Screw Length
Cortical vs Cancellous

- Cortical screws are the most frequently used and used on cortical bone
- Has smaller diameter threading than Cancellous screws
- Has a finer pitch than Cancellous screws
- Cancellous screws are only used in cancellous bone
Partial Thread vs Full Thread

- Cortical screws are almost exclusively full thread
- Partial thread is used to bring bone fragments together under compression
- Partial thread can come in various thread lengths (example 16mm, 32mm)
Self Tapping vs Non Self Tapping

• Creates its own thread path by cutting into the bone
• Requires the use of a tap to create thread path
• This adds another step to each screw insertion
Solid vs Cannulated

• Cannulated screws have a “hole” right through the entire screw
• This allows a K-Wire to be inserted into the bone and used a guide for the drill and screw insertion
• Requires cannulated drill and screwdriver
Locking vs Non Locking

- Locking screws have a finer diameter thread and pitch than cortical screws
- Locking screws have a threaded head that allow them to screw into the plate
- Requires special drill guides, drill bits and plates (LCP Plates)
Stainless Steel vs Titanium

- They are not interchangeable!
- Titanium screws must be used with titanium plates and stainless steel screws with stainless steel plates
- Mixing of these two metals can cause galvanic corrosion and subsequent failure of the implant
Questions???