Design Rationale

The Hydroxyapatite (HA) Coated Half Pins from Smith & Nephew are designed to help eliminate pin loosening and provide more secure pin fixation during long term external fixation treatment (>3 months). These pins use a combination of HA coating on the threads and superior thread geometry to provide excellent long term fixation.

The HA coating is applied to the full length of the threads. This allows the coating to engage both far and near cortex. This is critical since most loosening forces on a pin are applied at the near cortex.

Extraction has also been improved. The tri-flange shank improves grip on pin shank to help eliminate slip with the extraction device. This shank extends to within 2cm of the threads so that no matter how much the shank is trimmed, you still will have flats to grip at extraction.

The unique shank does require a unique insertion instrument. This instrument is part of a very simple instrument set that allows for easy pin insertion in both large and small patients. Also available is a new pin cutter that cuts with shear action. This provides a much smoother surface on the trimmed pin. The shear action also gently cuts the pin so the trimmed section does not pose an airborne hazard to OR personnel.

The HA Pins are not self drilling, so pre-drilling is required. The bullet tip on the end of the threads is designed to make it easier to find the pre-drilled hole.

The pins are available in stainless steel only. They are sterile packed and may not be re-sterilized. They are shipped one per package.

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**Dimensions – 6.0mm**
Shank diameter: 6mm
Shank Lengths: 150mm and 200mm
Thread diameter:
Major diameter: 6.0mm
Minor diameter: Tapers to 4.8mm
Thread lengths: 15-90mm
HA coating extends full length of threads

**Dimensions – 4.5mm**
Shank diameter: 6mm
Shank Lengths: 150mm
Thread diameter:
Major diameter: 4.5mm
Minor diameter: Tapers to 3.8mm
Thread lengths: 10-50mm
HA coating extends full length of threads
HA Coating
Most half pin loosening occurs at the near cortex. With weight bearing, cantilever forces are applied to the pin at the near cortex causing the pin to move inside the pin tract. Over time, this enlarges the pin tract allowing the pin to loosen. The Smith & Nephew HA coated pins have fully coated threads, so that both far and near cortices are engaged. This provides more stable fixation and allows the fixation to improve over time.

Tapered Threads
The HA Coated pins have threads with a constant major diameter and a tapered minor (core) diameter. Constant major diameter increases bone purchase. The tapered minor diameter creates about 0.5mm of radial compression. This configuration also allows some backing out of the pin in the event of over-insertion.

Tip Configuration
The HA Coated Half Pins feature a “bullet” nose. This rounded nose is slightly smaller in diameter than the threads and is designed to make it easier to find the pre-drilled hole. This will be particularly helpful when the pin site is in a thick soft tissue envelope. The tip of the half pin offers a bullet nose.

Tri-Flange Chucking End
The chucking end has flanges that are 120° apart. The flats extend from the chucking end to within 2cm of the threads. The tri-flange allows the appropriate amount of torque for pin insertion and extraction. The primary purpose of the tri-flange is to give the extraction instrument flats to grip. This helps eliminate slip and makes the pin easier to extract than a pin with a round shank.