FEMORAL NECK SYSTEM
Dedicated Fixation for Femoral Neck Fractures
The Femoral Neck System (FNS) is engineered specifically for femoral neck fractures, with improved stability intended to reduce re-operations related to fixation complications.

Refer to the following pages for more details.
Enhanced Fixation...

Designed to provide both angular and rotational stability in a single implant intended to reduce reoperations related to fixation complications.\(^1,2\)

Resistance to Varus Collapse

A published biomechanical study shows that FNS is twice as strong as three cannulated screws (3CS) against femoral neck and leg shortening. The same study also revealed comparable results to two types of sliding hip screws.\(^1\)

Biomechanical Evaluation of the Femoral Neck System in Unstable Pauwels III Femoral Neck Fractures; A Comparison with the Dynamic Hip Screw and Cannulated Screws

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Objectives: To compare the biomechanical properties of femoral neck fracture fixation systems using a three-dimensional finite element analysis.

Methods: Three sets of proximal femoral models were created to simulate the bone anatomy of a 70 kg male. The constructs were a dynamic hip screw (DHS) with and without anti-rotation screw, and a cannulated screw (CS) with and without anti-rotation screw. The bone models were subjected to a neutralization force (N), varus force (3 Nm), and axial rotation (10 Nm) to simulate the postoperative load. The results were compared to a published biomechanical study of FNS and three cannulated screws (3CS).

Results: The FNS construct showed superior resistance to varus collapse, with a maximum torsion of 350 Nm compared to 150 Nm for 3CS. The FNS construct also demonstrated superior rotational stability, with a maximum varus collapse of 0.5 degrees compared to 1.5 degrees for 3CS.

Conclusions: The FNS construct offers superior resistance to varus collapse and rotational stability compared to 3CS.

Benchtop test results may not be an indication of clinical performance. Three cannulated screws tested were DePuy Synthes Cannulated Screws. The sliding hip screws tested were DePuy Synthes DHS Screw with anti-rotation screws and a DHS Blade (both types in angular stability study and the DHS Blade only in the rotational stability study).\(^2\)

Integrated Rotational Stability

Regardless of construct size, FNS offers enhanced rotational stability. Mechanical testing indicates a minimum of 150% increased rotational stability when comparing to three cannulated screws (3CS). The same testing also revealed comparable results to a sliding hip screw with antirotation screw.\(^1\)
Implant insertion is achieved using one central guide wire and with the help of one main instrument assembly, reducing intraoperative handling.

**Surgical Steps**

1. Target  
2. Measure  
3. Ream  
4. Insert

**Streamlined Procedure**

Designed for a simplified technique using a single, central guide wire and targeted insertion handle while minimizing loss of reduction during insertion.

**Guided Implant Placement**

1. **Insertion Handle**
   - Used for initial insertion of Bolt and Plate
   - Serves as targeting device for ARScrew and Locking Screw(s)
   - Guides additional wires

2. **Insert**
   - Guides insertion of ARScrew
   - Allows for up to 20mm of intraoperative compression

3. **Protective Sleeve**
   - Guides insertion of Locking Screw(s)
   - Helps to protect soft tissue

**Reduced Incision Size**

Due to the minimized size of the implant, FNS allows for easy insertion – even through a small incision.

**Minimized Implant Footprint**

The implant footprint on the bone is as small as three cannulated screws.

**No Lateral Protrusion**

FNS is intended to minimize invasiveness on the patient, including up to 20mm of guided collapse, without lateral protrusion of the bolt for the first 15mm.

**In a Compact Design**

Designed with a small footprint to reduce lateral prominence, a dynamic Bolt and ARScrew to eliminate lateral protrusion of the implant, and a short incision to reduce soft tissue disruption.
Construct Overview

1. Bolt
   - Cylindrical design intended to maintain reduction during insertion
   - Provides angular stability
   - Guided collapse designed to reduce lateral protrusion (Bolt and ARScrew slide together max. 20mm)

2. Antirotation-Screw (ARScrew)
   - Provides rotational stability
   - Allows implant placement even in a small femoral neck

3. Plate
   - Provides angular stability
   - Designed to provide a minimized implant footprint
   - Accommodates standard 5.0mm Locking Screw

Material
- Ti-6Al-7Nb (TAN)

Construct Sizes
- 75mm to 130mm (5mm increments)

Plates
- 1-Hole
- 2-Hole Optionally Available
- CCD Angle: 130°

Packaging
Sterile Only

References

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