

HammerTech Fixation System

CAUTION: Federal Law (USA) restricts this device to sale by or on the order of a physician.

DESCRIPTION OF THE MEDICAL DEVICE:

The HammerTech Fixation System consists of PEEK (Polyetheretherketone (ASTM F2026)) and titanium alloy (Ti6Al4V ELI (ASTM F136)) threaded bone implants intended for fixation of the interphalangeal joints of the lesser toes. The device is offered in three configurations; straight cannulated PEEK, straight cannulated titanium, and angled solid titanium. Each configuration is offered in five different sizes to address to a variety of patient anatomy. The specialized instruments are made primarily of surgical grade stainless steel (ASTM F899). The implant and associated instrumentation is supplied sterile and non-sterile.

INDICATIONS FOR USE

The HammerTech device is indicated for the fixation of osteotomies and reconstruction of the lesser toes following correction procedures for hammertoe, claw toe and mallet toe.

CONTRAINDICATIONS

- Local or systemic, acute or chronic inflammation;
- Active infection or inflammation;
- Growing patients with open epiphyses
- Physiologically or Psychologically inadequate patients;
- Patients with high levels of activity

PRECAUTIONS

Only experienced surgeons should perform the implantation of the HammerTech device with specific training in treating its associated indications. Because of the technically demanding nature of procedure, surgeons should preoperatively plan to ensure that the risks presented to the patient are minimized. Pre-operative assessment of the suitability of the patients' anatomy for accepting implants is made on the basis of X-Rays, CT scans and other radiological studies.

Only patients that meet the criteria described in the Indications for Use section should be selected. Under no circumstances should damaged components or surgically excised components be used. Implants that have already been in contact with body fluids or body tissues must not be re-sterilized and are for single use only.

Correct selection of the implant is extremely important.

The morbidity as well as patient weight, height, occupation and/or degree of physical activity should be considered.

Proper Implant handling before and during the operation is crucial. Handle the implant components properly. Ensure packaging integrity. Do not allow the implant surfaces to be damaged. Single use devices should not be re-used. Possible risks associated with re-use of single use devices include:

- Mechanical malfunction
- Transmission of infectious agents

Adequately instruct the patient. The physician should inform the patient about orthopedic implant advantages and disadvantages, post-operative limitations, weight/load bearing stresses which could affect bone healing, implant limitations, and the fact that premature physical activity and full weight/load bearing stresses have been implicated in premature loosening, damage and/or fracture of orthopedic prostheses.

ADVERSE EFFECTS

- Tissue damage resulting from improper placement of implants or instruments;
- Infection;
- Hematoma;
- Allergy;
- Thrombosis;
- Pain, discomfort or wound healing complications at the surgical site;
- Misalignment of anatomical structures;
- Bone non-union or delayed union;
- Dislocation, migration and/or subluxation of implant from improper positioning, trauma, loss of fixation and/or muscle and fibrous tissue laxity;
- Implant fracture

Adverse effects may necessitate re-operation, revision or removal surgery, arthrodesis of the involved joint, and/or amputation of the limb.

DIRECTIONS FOR USE

To implant the HammerTech device, use only the specialized HammerTech instrumentation. Do not use implants or instruments from any other system or manufacturer.

All HammerTech System components should be carefully inspected to ensure proper working condition. Critical areas, including joint surfaces, should be checked for wear, damage or irregularities. Damaged or broken HammerTech System devices must not be used and should be returned to Fusion Orthopedics for evaluation.

Before using the HammerTech System, the surgeon should be thoroughly familiar with the HammerTech System Surgical Technique Manual. Pre-Operative planning by the surgeon should determine the size of implant required and an adequate supply of the implant sizes should be available prior to surgery, including larger and smaller sizes than those expected to be used.

For complete instructions regarding the proper use and application of HammerTech System implants and instruments, please refer to the HammerTech System Surgical Technique Manual. A comprehensive manual can be found at www.fusionorthopedics.com/surgicaltechnique

CARE AND HANDLING

HammerTech Fixation System implants described in this package insert are either provided sterile or non-sterile as indicated on the individual product's label. Implants and instruments that are presented in instrument trays are provided non-sterile.

Implants in sterile packaging should be inspected to ensure that the packaging has not been damaged or previously opened. Sterile implants and instruments should not be used after the expiration date. If the outer package, seal, or inner package integrity has been compromised, sterilization cannot be assured and the device should not be used. Contact the manufacturer for further instructions. The implants should be opened using aseptic OR technique; they should only be opened after the correct size has been determined.

An implant should never be re-sterilized after contact with body tissues or fluids. Devices labeled for single-use only should never be reused. The mechanical characteristics of sterile instruments and implants may be altered if they are re-used as this would compromise device integrity, performance, and standards conformance. Reuse of these devices may potentially result in serious patient harm. Examples of hazards related to the reuse of these devices include, but are not limited to: significant performance degradation, cross-infection, and contamination.

Implants provided non-sterile should be processed according to the recommended parameters for instruments as outlined (below) in the instructions for use and according to standard hospital procedure. HammerTech Fixation System implants and instruments provided non-sterile and should be stored in the original packaging until cleaned and sterilized. Implants and instruments should be stored at room temperature.

STERILIZATION, CLEANING AND DISINFECTION

PREPARATION FOR CLEANING:

Clean the device until there is no visual contamination of the instruments directly after application (within a maximum of 2 h). For this use only running water or a disinfectant solution; the disinfectant should be aldehyde-free (otherwise fixation of blood impurities), possess a fundamentally approved efficiency, be suitable for the disinfection of instruments and be compatible with the instruments. For manual removal of impurities only a soft brush or a clean soft tissue is to be used, in no case metal brushes or steel wool.

Rinse all lumens five (5) times by application of a single-use syringe (minimum volume 10ml).

MANUAL CLEANING:

1. Soak instruments for a minimum of five (5) minutes in enzymatic detergent made with potable water.
2. Deliberately brush and pay considerable attention to areas of a high exposure, accumulation, or retention of soil.
3. Rinse thoroughly with warm water. Final rinses conducted with warm (30° C. to 40° C.) purified water (reverse osmosis processed, or better), with a minimum rinse time of 30 seconds.
4. Check the instruments for visible soil (see "Verifying Cleaning"). Repeat cleaning if soil is visible.

For Devices with challenging design features (cannulations, anodized color bands, handle interfaces, hinged instruments, instruments with crevices):

1. Immerse instrument and soak for a minimum of five (5) minutes in enzymatic detergent.
2. Use cleaning brushes/pipe cleaners to remove additional soil from challenging design features and areas of high exposure, accumulation, or retention of soil such as: cannulations, anodized color bands, handle/chuck interfaces, hinged instruments, or instruments with crevices.
 - a. Scrub interfaces several times using a twisting action if possible. If components of the instrument can be retracted or moved, it is necessary to retract or open the part in order to access and clean these areas.
 - b. Scrub inside cannulas/holes with a tight-fitting brush or pipe cleaner using a twisting action. The brush or pipe cleaner should be of an appropriate size to ensure that full depth of the feature is reached.
 - c. Scrub around hinged/mating surface areas with a brush or pipe cleaner.
 - d. Scrub all crevices, such as those found around color bands, using a cleaning brush or pipe cleaner.
3. Sonicate instrument in its fully opened position for a minimum of 15 minutes in an ultrasonic cleaner containing warm enzymatic detergent.
4. Rinse thoroughly with warm water, making sure to irrigate the challenging design features. If the components of the instrument are moveable or can be retracted, it is necessary to retract or open the part for thorough rinsing at these locations. Blind holes should be repeatedly filled and emptied.
5. Check instruments for visible soil (see "Verifying Cleaning"). Repeat cleaning if soil is visible.

VERIFYING CLEANING

1. After thoroughly cleaning, visually inspect devices under normal lighting for the removal of visible soil.
2. For difficult to view design features, such as cannulation, apply 3% hydrogen peroxide. Bubbling is indicative of the presence of blood.

Note: Rinse the instruments thoroughly with warm water following hydrogen peroxide testing. Repeat cleaning if not visibly clean and re-inspect.

INSPECTION AND FUNCTION TESTING:

Device/Feature	Flaw
All reusable devices	Visually inspect for damage or wear.
Hinged instruments	Check for smooth movement of hinge without excessive "play."
Locking mechanisms	Check for action.
Cutting features	Check edges for distortion/large nicks. Edges should be continuous.
Trials	Articular surfaces should be smooth and free of cracks and deep nicks.
Mating parts	Check to make sure that mating parts fit together without complications.
Reamer/drill bits	Inspect "chuck" end for burrs and distortion that might hinder insertion into a drill.
Hammering surfaces	Inspect for burrs and large nicks.
Driving instruments	Inspect plastic ends for cracks and large nicks.
Metal surfaces	Inspect for corrosion and major deformation.

STERILIZATION

Sterilize devices inside their respective trays according to the parameters indicated below:

Sterilization Method	Gravity Steam	Pre-Vacuum Steam
Wrapping	Single	Single
Exposure Temperature	132°C (270°F)	132°C (270°F)
Minimum Cycle Time	15 minutes	4 minutes
Minimum Dry Time	30 minutes	30 minutes

This wrap should be FDA cleared for the proposed cycle specifications.

WARNING: Total drying time depends on several factors. These include, but are not limited to: altitude, humidity, type of wrap, preconditioning, size of chamber, mass of load, material of load, and placement in chamber. Verify that drying time set in each autoclave yields dry surgical equipment. These instructions were developed using guidance from ISO 17665, AAMI TIR 12, and AAMI ST79. Fusion Orthopedics recommends that all users observe these standards.

MAINTENANCE:

If any of the instruments exhibit any of the flaws listed above adequately dispose of the devices. For more information regarding cleaning and sterilization of the HammerTech implants or Instruments, please visit www.fusionorthopedics.com/cleaning

MAGNETIC RESONANCE (MRI) COMPATIBILITY

The HammerTech implant has not been evaluated for safety and compatibility in the MR environment. It has not been tested for heating, migration, or image artifact in MR environment. The safety of the HammerTech implant in the MR environment is unknown. Scanning a patient who has this device may result in patient injury.

CUSTOMER SERVICE

For further information regarding the HammerTech System, a copy of the HammerTech System Surgical Technique Manual, or the Cleaning And Sterilization Protocol Manual, please contact Fusion Orthopedics, LLC, your local Fusion Orthopedics Distributor, or visit FusionOrthopedics.com

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