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## MectaLIF Anterior Intervertebral Fusion Device System

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Important notice: the implant(s) can be prescribed and implanted only by a doctor legally authorized to perform this type of surgery.

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### MectaLIF Anterior Intervertebral Fusion Device System - Instruction For Use

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#### GENERAL

Before any surgery, the surgeon must be familiar with the sales literature and operative technique and must carefully read these instructions for use.

Patient selection is as important as implant placement and positioning. Obesity or unsuitable functional requirements may generate exceptional stresses and reduce the implant life. The warnings must be heeded and the instructions for use must be strictly followed. The MectaLIF Anterior System is offered in PEEK (Polyetheretherketone polymer) as well as in TiPeek material (Titanium Coated PEEK) with Ti6Al4V alloy Plates and Screws.

#### INTENDED USE

The MectaLIF Anterior Intervertebral Fusion Devices System are fixation devices intended for stabilization and to promote bone fusion during the normal healing process following surgical correction of disorders of the spine.

#### PRODUCT DESCRIPTION

These instruction for use are intended for all the products described here below.

The family of MectaLIF Anterior devices is composed of two designs:

- MectaLIF Anterior Stand-Alone
- MectaLIF Anterior Simple

The MectaLIF Anterior Stand-Alone is a system consisting of cages which can be used in combination with three or four titanium bone screws depending which of the four different titanium plate designs are used. The MectaLIF Anterior Simple is a cage/plate system which requires additional supplementary fixation.

The design incorporates the functions of an anterior plate and a radiolucent interbody spacer (cage). The four plate designs that can be used are designed to specific anatomic requirements.

The system is modular. It offers different footprints, different lordosis angles and different heights, to which the surgeon can connect any of the four profile plates that is required for the specific pathology the surgeon wants to treat. The MectaLIF Anterior Intervertebral Fusion Device System is offered in PEEK (Polyetheretherketone polymer) as well as in TiPeek material (Titanium Coated PEEK) with Ti6Al4V alloy Plates and Screws.

The MectaLIF Anterior System has tantalum markers.

#### INDICATION FOR USE

The MectaLIF Anterior is an anterior interbody fusion device indicated for use in patients with degenerative disc disease (DDD) at one or two contiguous levels from L2 to S1. These DDD patients may also have up to Grade I spondylolisthesis or retrolisthesis at the involved level(s). The interior of the spacer component of the MectaLIF Anterior System can be packed with autograft or autologous bone graft. DDD is defined as back pain of discogenic origin with degeneration of the disc confirmed by history and radiographic studies.

These patients should be skeletally mature and have had six months of non-operative treatment. These patients may have had a previous non-fusion spinal surgery at the involved spinal level(s).

The MectaLIF Anterior Stand-Alone system is a system intended to be used with bone screws provided and requires no additional supplementary fixation. The MectaLIF Anterior Simple requires additional supplementary fixation such as pedicle screws and rods or lumbar anterior plate system.

### **CONTRAINDICATIONS**

The use of the MectaLIF Anterior System is contraindicated in the following cases:

- Active infectious process or significant risk of infection (immunocompromise)
- Signs of local inflammation
- Fever or leukocytosis
- Morbid obesity
- Pregnancy
- Mental illness
- Grossly distorted anatomy caused by congenital abnormalities
- Any other medical or surgical condition which would preclude the potential benefit of spinal implant surgery, such as the presence of congenital abnormalities, elevation of sedimentation rate unexplained by other diseases, elevation of white blood count (WBC), or a marked left shift in the WBC differential count
- Suspected or documented metal allergy or intolerance
- Any case not needing a fusion
- Any case where the implant components selected for use would be too large or too small to achieve a successful result
- Any patient having inadequate tissue coverage over the operative site or inadequate bone stock or quality
- Any patient in which implant utilization would interfere with anatomical structures or expected physiological performance
- Any patient unwilling to follow postoperative instructions
- Any case not described in the indications

Although not absolutely contraindicated, conditions to be considered as potential factors for not using this device include severe bone resorption, osteomalacia, severe osteoporosis.

### **WARNINGS**

- A successful result is not always achieved in every surgical case. This fact is especially true in spinal surgery where other patient conditions may compromise the results.
- Preoperative and operating procedures, including knowledge of the surgical techniques and correct selection and placement of the implants are important considerations in the successful utilization of the system by the surgeon. Furthermore, the proper selection and the compliance of the patient will greatly affect the results. Patients who smoke have been shown to have a reduced incidence of bone fusion. These patients should be advised of this fact and warned of this consequence. Obese, malnourished and / or alcohol / drug abuse patients and those with poor muscle and bone quality and / or nerve paralysis are also poor candidates for spinal fixation.
- Patients with previous spinal surgery at the levels to be treated may have different clinical outcomes compared to those who have not experienced previous surgery.
- The following circumstances may reduce the chance of a successful outcome: signs of local inflammation; fever or leukocytosis; metal/polymer sensitivity/allergies to the implant material; grossly distorted anatomy due to congenital abnormalities; osteopenia and/or osteoporosis; unsuitable or insufficient bone support, bone immaturity.
- The MectaLIF Anterior Intervertebral Fusion System has not been evaluated for safety and compatibility in the MR environment. It has not been tested for heating, migration, or image artifact in the MR environment. The safety of the MectaLIF Anterior Intervertebral Fusion System in the MR environment is unknown. Scanning a patient who has this device may result in patient injury.
- The MectaLIF Anterior Intervertebral Fusion System implants should never be re-implanted. While an implant may appear undamaged, microscopic imperfections may occur and cause implant failure.
- In the absence of fusion, the instrumentation and/or one or more of its components can be expected to pull out, bend or fracture as a result of exposure to every day mechanical stresses.
- Correct selection of the implant is extremely important. The potential for satisfactory fixation is increased by the selection of the proper size, shape, and design of the implant. While proper selection can help minimize risks, the size and shape of human bones present limitations on the size, shape and strength of implants.

## **PRECAUTIONS**

- The use of the MectaLIF Anterior System should only be undertaken after the surgeon has become thoroughly knowledgeable about spinal anatomy and biomechanics, has had experience with intervertebral fusion procedures and spinal supplemental fixation and has had hands-on training in the use of this device.
- The MectaLIF Anterior System should not be implanted in patients with severe osteoporosis or osteopenia.
- Correct handling of the implants is extremely important.
- All the MectaLIF Anterior System devices supplied sterile should be handled with appropriate precautions to maintain sterility.
- The important medical information given in this document should be conveyed to the patient.
- An explanted implant should never be re-implanted. Even though the device appears undamaged, it may have small defects and internal stress patterns which may lead to early breakage.

## **ADVERSE EFFECTS**

Adverse effects may occur when the implant is used either with or without associated instrumentation. The potential risk of adverse effects as a result of movement and non-stabilization may increase in cases where associated complementary support is not employed. Potential adverse events include but are not limited to:

1. Implant migration.
2. Disassembling or breakage of the implant.
3. Foreign body reaction to the implants including possible tumor formation, auto immune disease and / or scarring.
4. Pressure on the surrounding tissues or organs.
5. Loss of proper spinal curvature, correction, height and / or reduction.
6. Infection.
7. Bone fracture or bone loss or decrease in bone density, possibly caused by stresses shielding at, above or below the level of surgery.
8. Non-union (or pseudarthrosis), delayed union or mal-union.
9. Loss of neurological function, appearance of radiculopathy, development of pain, dysesthesias, hyperesthesia, anesthesia, paresthesia, and/or the development or continuation of pain, numbness, neuroma, spasms, sensory loss, tingling sensation, and/or visual deficits.
10. Neurovascular compromise including paralysis, cerebral spinal fluid leakage
11. Haemorrhage of blood vessels and / or haematomas occlusion, seroma, edema, hypertension, embolism, stroke, excessive bleeding, phlebitis, wound necrosis, wound dehiscence, damage to blood vessels, or other types of cardiovascular system compromise.
12. Urinary retention or loss of bladder control or other types of urological system compromise.
13. Discitis, arachnoiditis and / or other types of inflammation.
14. Deep venous thrombosis, thrombophlebitis and / or pulmonary embolus.
15. Dural tear requiring surgical repair. This risk is related to the surgical procedure. The intended use of the device does not require it to be close to the dura.
16. Inability to resume activities of normal daily living.
17. Early or late loosening or movement of the implant.
18. Scar formation possibly causing neurological compromise or compression around nerves and / or pain.
19. Fracture, micro-fracture, resorption, damage or penetration of any spinal bone (including pedicles and / or vertebral body) and / or bone graft or bone graft harvest site at, above and / or below the level of surgery.
20. Herniated nucleus pulposus, disc disruption or degeneration at, above or below the level of surgery.
21. Loss of or decrease in spinal mobility or function.
22. Development of respiratory problems, e.g. pulmonary embolism, atelectasis, bronchitis, pneumonia, etc.
23. Reproductive system compromise, including sterility, loss of consortium, and sexual dysfunction.
24. Cessation of any potential growth of the operated portion of the spine.
25. Death.

Adverse events may necessitate re-operation or revision. A revision is a procedure which adjusts or in any way modifies the original implant configuration, e.g. adjusting the position of the original configuration or removal of implants with their subsequent replacement. A removal is a procedure which removes one or more implants of the original device configuration without any replacement. A re-operation is a procedure which involves any surgical procedure at the involved spinal level(s) which does not remove, modify or add any implants.

## **INSTRUCTIONS FOR USE**

### **Implant Selection:**

- The selection of the proper size, shape and design of the implant for each patient is crucial to the success of the procedure. Surgical implants are subject to repeated stresses in use and their strength is limited by the need to adapt the design to the human anatomy. Unless great care is taken in patient selection, placement of the implant and postoperative management to minimize stresses on the implant, such stresses may cause material fatigue and consequent breakage of the implant before the fusion process is complete, which may result in further injury or the need to remove the implant prematurely.
- Excessive loads, such as excessive torque, tensile or compression load applied to long handle insertion tools attached to the implant or direct application of loads to a small area of the devices can damage the implant/instrument interface. Fractured implants should be removed and/or replaced.
- Once the fusion has healed, the surgeon and the patient should carefully weigh the risk and the benefit if considering the removal of the MectaLIF Anterior Intervertebral Fusion System.
- Improper selection, placement, positioning and fixation of these devices may result in unusual stress conditions reducing the service life of the implant.
- The surgeon is to be thoroughly familiar with the surgical procedure, instruments and implant characteristics prior to performing surgery. Periodic follow-up is recommended to monitor the position and state of the implants, as well as the condition of the adjoining bone.

### **Implant Fixation:**

Installation and positional adjustment of implants must only be done with special ancillary instruments and equipment supplied and designated by MEDACTA®. In the interests of patient safety it is therefore recommended that MEDACTA® implants are not used with implants from any other source.

### **PREOPERATIVE**

The surgeon and operating theatre personnel should wear sterile surgical gloves. Under no circumstances should the components come into contact with hard objects (unless otherwise specified in the surgical technique). Before use, each component must be visually inspected for imperfections. Special surgical instruments are required for the surgery. To avoid damaging the implants and the instruments, these should be handled with the utmost care by qualified personnel and in an environment where conditions of hygiene are controlled. The correct usage of instruments is described in the surgical technique. Instruments must be inspected visually before the operation. Distorted or damaged instruments may result in malposition of the implant or implant failure.

1. Only patients that meet the criteria described in the indications should be selected.
2. Patient conditions and / or predispositions such as those addressed in the aforementioned contraindications should be avoided.
3. Care should be taken in the handling and storage of the implant(s). They should not be scratched or damaged.
4. Further information about this system will be provided upon request.
5. The surgeon should be familiar with the various implants before use and should personally verify that all implants are present before the surgery begins.
6. The size of the implant(s) for the case should be determined prior to beginning the surgery. An adequate inventory of implant sizes should be available at the time of surgery, including sizes larger and smaller than those expected to be used.
7. Additional sterile implants should be available in case of any unexpected need.

### **INTRAOPERATIVE**

1. The instructions in the MectaLIF Anterior System surgical technique should be carefully followed.
2. At all times, extreme caution should be used around the spinal cord and nerve roots. Damage to the nerves will cause loss of neurological functions.
3. Breakage, slippage or misuse of instruments or implants may cause injury to the patient or operative personnel.
4. The implant surface should not be scratched or notched since such actions may reduce the functional strength of the implant.
5. To ensure proper fusion below and around the location of the fusion, autogenous bone graft or autologous bone graft should be used. In case of limited availability autogenous bone graft can be mixed with synthetic bone graft substitute.
6. Bone cement (PMMA) should not be used, because the material may make removal of these implants difficult or impossible. The heat generated from the curing process may damage or deform the PEEK implants.
7. Utilize an imaging system to facilitate surgery.

## **POSTOPERATIVE**

The physician's postoperative directions and warnings to the patient and the corresponding patient compliance are extremely important.

1. Detailed instructions on the use and limitations of the implant should be given to the patient. The patient must be warned that loosening and / or breakage of the implant(s) are complications which may occur as a result of early or excessive weight-bearing, mechanical vibrations, muscular activity or sudden jolts or shock to the spine.
2. The patient should be advised not to smoke tobacco or utilize nicotine products, or to consume alcohol or non-steroidals or anti-inflammatory medications such as aspirin during the bone graft healing process.
3. The patient should be advised of the inability to bend at the point of spinal fusion and be taught to compensate for this permanent physical restriction in body motion.
4. It is important that the immobilization of the union is established and confirmed by radiographic examination. If a non-union develops or if the implants loosen, migrate and / or break, the implant should be revised and / or removed immediately before serious injury occurs.
5. MectaLIF Anterior System implants are intervertebral fixation devices intended to stabilize the treated segment during the healing/fusion process.
6. Any retrieved implants should be treated in such a manner that re-use in another surgical procedure is not possible.
7. Adequately instruct the patient in the appropriated postoperative care. The patient's ability and willingness to follow instructions is one of the most important aspects of successful healing.
8. As a precaution, before patients with implants receive any subsequent surgery (such as dental procedures), prophylactic antibiotics may be considered, especially for high-risk patients.

## **PACKAGING**

All Medacta® implants are supplied in a sterile form in single-use packages. The sterilization method is indicated on the label. The expiration date must be checked on the label as well as the package integrity to ensure that sterility of the contents has not been compromised. If a package is damaged or has been previously opened, do not use the implant. Do not re-sterilize.

If a loaner or consignment system is used, all sets should be carefully checked for completeness and all components including instruments should be carefully checked to ensure that there is no damage prior to use. Damaged packages or products should not be used, and should be returned to Medacta International or to the local distributor.

## **INSTRUMENTS**

Instruments are supplied non-sterile and must be cleaned and sterilized prior to use. Recommended cleaning, decontamination and sterilization instructions are provided on [www.medacta.com](http://www.medacta.com).

## **STORAGE**














The packages must be stored in a cool, dry place, not exposed to sunlight.

## **PRODUCT COMPLAINTS**

Any healthcare professional (e.g. customer or user of this system of products) who has any complaints or who has experienced any dissatisfaction in the product quality, identity, durability, reliability, safety, effectiveness and / or performance should notify Medacta® or the distributor. Furthermore, if any of the implanted spinal system implant(s) ever malfunction (i.e. does not meet any of its performance specifications or otherwise does not perform as intended) or is suspected of doing so, the distributor should be notified immediately. If any Medacta® product ever malfunctions and may have caused or contributed to the death or serious injury of a patient, the distributor should be notified immediately by telephone, fax or written correspondence. When filing a complaint, please provide the implant(s) name and number, lot number(s), your name and address, the nature of the complaint and notification of whether a written report from the distributor is requested.

## **FURTHER INFORMATION**

Recommended directions for use of this system (surgical operative techniques) are available at no charge upon request. If further information is needed or required, please contact your local Medacta® International representative.

	Do not reuse
	Do not re-sterilize
	Caution, read the accompanying documents
	Consult instructions for use
	Do not expose to sunlight
	Store in a dry place
	Do not use if package is damaged
	Use by
	Lot number
	Reference number
	Sterilized with ethylene oxide
	Sterilized by irradiation
	MR Unsafe

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The reference text is the English text.

Last Update: February 2020

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