	Instructions for use	Doc. No.: IU/10a
	for	Rev. No.: 01
	Adler™ Cemented Bipolar hemi-arthroplasty Prosthesis	Rev. Date: 10FEB2022

Important Information on ADLER™ Cemented Bipolar hemi-arthroplasty Prosthesis For use by an Accredited Orthopaedic Surgeon only

1. DEVICE DESCRIPTION:

ADLER™ Cemented Bipolar hemi-arthroplasty implants are used during a surgical procedure to replace the head of a damaged femur with an implant designed to stabilize the femur and restore hip function. During the procedure, only the ball of the femur is replaced. The cemented system comprises of the Endofit cemented stems, the Moduloc Bipolar Cup, Adler modular heads - HNSS, PMMA stem Centralizers and UHMWPE cement restrictors.

Adler Endofit femoral hip stems are manufactured from forged high nitrogen stainless steel (ISO 5832-9). Endofit stems are meant for cemented use, available in multiple sizes to suit patient anatomy and can be used for taper compatibility with all Adler SS Modular Heads. Surgeons may optionally use Adler Stem Centralizers to achieve a central position of the femoral stem in the intramedullary canal and further optionally use Adler Cement Restrictors to block off the intramedullary canal to achieve cement pressurization. Adler Modular Heads feature a 12/14 internal taper, certified for taper compatibility with all Adler femoral hip stems and are manufactured from high nitrogen stainless steel (ISO 5832-9). Adler Stem Centralizers are manufactured from PMMA conforming to ASTM D788 - 14. Adler Cement Restrictors are manufactured from UHMWPE conforming to ISO 5834-2. Moduloc Bipolar Cup are manufactured from UHMWPE conforming to ISO 5834-2; SS conforming to ISO 5832-1, Adler modular heads – HNSS are manufactured from High Nitrogen Stainless Steel conforming to ISO 5832-9.

2. Intended Purpose, Indications

ADLER™ Cemented Bipolar Hemi-arthroplasty Prosthesis is indicated for use in Partial hip arthroplasty in skeletally mature patients with the following conditions:

- Treatment of proximal femoral non-union, femoral neck fracture and trochanteric fractures of the proximal femur with head involvement, unmanageable using other techniques.
- A severely painful and/or disabled joint from osteoarthritis, traumatic arthritis, rheumatoid arthritis, or congenital hip dysplasia.
- Avascular necrosis of the femoral head.
- Acute traumatic fracture of the femoral head or neck.
- Failed previous hip surgery including joint reconstruction, internal fixation, arthrodesis, hemiarthroplasty, surface replacement arthroplasty.
- Certain cases of ankylosis.

Partial hip arthroplasty may be considered for younger patients if, in the opinion of the surgeon, an unequivocal indication for hemi-hip replacement outweighs the risks associated with the age of the patient and if limited demands regarding activity and hip joint loading can be assured. (See Warnings and Precautions)

Moduloc Bipolar Cup


The Moduloc Bipolar Cup is designed for un-cemented use in conjunction with a standard cemented or un-cemented femoral replacement implant for the following:

- Treatment of proximal femoral non-union, femoral neck fracture and trochanteric fractures of the proximal femur with head involvement, unmanageable using other techniques.
- Non-inflammatory degenerative joint disease including osteoarthritis, osteonecrosis, avascular necrosis and post-traumatic arthritis.
- Rheumatoid arthritis.
- Arthritis secondary to a variety of diseases and anomalies and correction of functional deformity such as congenital hip dysplasia or ankylosing spondylitis.
- Revision procedures where other treatment or devices have failed.

Notes:

Correct prosthesis selection is extremely important: Selection of the proper size, shape and design of the prosthesis significantly influences the potential for success of the procedure. Careful implant seating and adequate bony support are required. Small statured patients with relatively smaller anatomical dimensions may require the use of smaller sized implants. These smaller sized implants may not be



	Instructions for use	Doc. No.: IU/10a
	for	Rev. No.: 01
	Adler™ Cemented Bipolar hemi-arthroplasty Prosthesis	Rev. Date: 10FEB2022

appropriate for other patients. Regardless of the endosteal area of the bone, surgeons are encouraged to use their best medical judgment to choose the proper implant size for a given patient.

The following factors related to patient selection can be critical to eventual success of the procedure.

- a. **Patient Weight:** Prostheses can be severely loaded due to overweight obese patients. Such overloads can lead to failure of the prosthesis. This can be a major consideration in cases where patients are small statured with small anatomical dimensions that require the use of a small sized implant.
- b. **Patient occupation or activity:** Activities by operated patients that involve substantial walking, running, lifting or other activities that can cause muscle strain can result in forces that can cause failure of the fixation, the device or both. Patient's must be cautioned against unrealistic expectations of function and must bear in mind the fact that joint replacement prostheses do not possess the capability of restoring function to the level expected from normal healthy human bone.
- c. **Alcoholism, senility, mental illness:** Patient's suffering from these conditions, among others, may ignore certain necessary limitations and precautions related to having been implanted with a joint replacement implant, leading thereby to failure or other complications.
- d. **Foreign body sensitivity:** Where sensitivity to materials is suspected, patients should be subjected to appropriate tests prior to material selection or implantation.

Special Note: Patients with renal insufficiency may be sensitive to potential metal ion release. Further, since not much is known about the transport of metal ion release across the placenta, these devices should be used with caution in women of childbearing age.

3. **CONTRAINDICATIONS:**

Contraindications include, but are not limited to the following:


- Acute or chronic infections near the joint or infection of a systemic nature.
- Accompanying illnesses affecting the function of the joint implant.
- Systemic illnesses and metabolic disturbances.
- Severe osteoporosis or osteomalacia.
- Severe damage to bony structures that stands in the way of stable implantation of the implant components.
- Bone tumours in the area of implant anchoring.
- Bony deformities, axial mal-positioning or bony conditions that rule out implantation of the implant components.
- Obesity and severely overweight patients.
- Expected overloading of the joint implant due to any reason.
- Drug abuse or alcoholism.
- Lack of patient co-operation.
- Sensitivity to Implant Materials

4. **Possible Adverse Effects**

A listing of the possible adverse events, includes, but is not limited to the following:

- Early or late loosening, disassembly, implant migration, bending and/or breakage of any or all of the implant components.
- Foreign body (allergic) reaction to implants.
- Dislocations, Contracture, limited flexibility, Instability
- limb length discrepancy leading to abductor lurch
- Primary and secondary infection.
- Nerve damage, haematomas and wound-healing impairment.
- Heterotopic ossification or myositis ossification with joint pain and restricted movement.
- General medical complications including but not limited to Deep Vein thrombosis, (Phlebitis), Cerebrovascular accident, renal failure, Urinary tract infection, heart failure, Sores, Pneumonia, Chest/Respiratory Infection.
- Peri-prosthetic Fracture/Fissure
- Intra-operative fracture leading to non-unions due to inadequate reattachment and/or early weight bearing, trochanteric non-union/migration



	Instructions for use for Adler™ Cemented Bipolar hemi-arthroplasty Prosthesis	Doc. No.: IU/10a
		Rev. No.: 01
		Rev. Date: 10FEB2022

- Progressive bone resorption and osteolysis
- Subsidence, Implant migration due to trauma or loss of fixation,
- Deformation or Breakage of stem centralizer and/or cement restrictor.
- Cement Mantle failure
- Acetabular erosion
- Pulmonary Embolism/ Acute Respiratory Distress Syndrome

Note: Diabetes, at present, has not been established as a contraindication. However, because of the increased risk for complications such as infection, slow wound healing, etc., the physician should carefully consider the advisability of hip replacement in the severely diabetic patient.

5. **Warnings and Precautions:**

Pre-operative:

Joint replacement implants manufactured by Adler Mediequip Pvt. Ltd. should only be used by orthopaedic surgeons experienced with joint replacement surgery. Before surgery, the surgeon must plan the operation with a view to correct selection and sizing of the implant components and their positioning in the bone. The surgeon needs to ensure that:

- All necessary implant components are available
- Highly aseptic surgical conditions are present
- The implantation instrumentation is complete and in good working order
- The implant bed is prepared using the appropriate ADLER instruments for the specific replacement procedure being performed
- All informational material concerning the range of implants, instrumentation and surgical technique has been reviewed and is available and the surgeon and the surgical team are familiar with this information
- The rules of medical skill, the state of the art, and the contents of scholarly publications by medical authors are known and observed
- In uncertain preoperative situations, especially with implants already in place, prior relevant information has been obtained from the concerned manufacturer
- Re-use of any implant is prohibited.

Caution:

The following conditions, singularly or concurrently, tend to impose severe loading on the affected extremity thereby placing the patient at higher risk of failure of the prosthesis.

- Obesity or excessive patient weight.
- High levels of patient activity.

Intra-operative:

Adler cemented femoral hip stems are available in various sizes and offsets to suit the patient's femoral anatomy. Details of the implant size and offset are explicitly marked on the packaging and/or on the implants themselves. In addition, the related product literature carries detailed information related to the selection of a particular size and the resultant combinations of offset and leg length resulting from the selection of various Adler Modular Heads. Always ensure that femoral stems and modular heads are from the same company to ensure the use of only compatible taper combinations.


Caution:

Selection of the Adler Modular Head neck length as well as the selected Adler cemented femoral hip stem is performed with the aid of trial implants provided in the corresponding Adler Instrumentation Set. The correct use of these components is clearly described in the relevant product literature corresponding with the femoral hip stem being implanted.

Prior to wound closure, any exposed bone cement and bone residue should be removed. Bone cement particles and pieces of bone that find their way into the gliding surfaces of the implant are known to cause abnormal (third body) wear that could lead to early failure and the need for revision surgery.

Note: Modular implant components made by different manufacturers may not be compatible with one another. Combining modular implant components of different manufacturers, in the absence of specific prior manufacturer confirmation, is not permitted. Adler offers Modular Head with two materials High Nitrogen Stainless Steel and COCR. Therefore, combination of Adler Endofit Femoral Hip Stems with Adler CoCr Modular Heads is not permitted.



	Instructions for use for Adler™ Cemented Bipolar hemi-arthroplasty Prosthesis	Doc. No.: IU/10a
		Rev. No.: 01
		Rev. Date: 10FEB2022

Post-operative

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

- Detailed instructions must be given to the patient concerning the use and limitations of the implanted device. The patient must be warned that loosening, bending and/or breakage of the device are complications that may occur due to early or excessive weight bearing or muscular activity. The patient should be warned to avoid falls or sudden jolts of any nature.
- The patient must be made to understand that artificial joint replacement implants are always inferior to the function of the natural joint, and only a relative improvement of the preoperative condition can be achieved.
- The patient must be explained that an artificial joint can loosen due to overloading, wear and tear, or infection. Implant loosening can necessitate a revision operation that, under some circumstances, offers no opportunity to restore joint function again.
- Following joint replacement, the patient will have to submit to regular medical follow-ups.
- The patient must appreciate that the implant cannot be subjected to undue stress through extreme loading, work, and sporting activities.

The warnings and precautions mentioned above cover all the relevant warnings and precautions and clinically relevant information, as consistent with the clinical data.

6. **SPECIAL NOTE TO USERS:**

Implant components that have been implanted and removed must never be re-used even if they appear undamaged due to the high risk of fatigue failure due to internally accumulated material stresses.

7. **PACKAGING AND LABELING:**

Implant components supplied in pre-sterile condition are packed in double packaging kept inside suitable size of outer box. Sterilization is carried out using the gamma irradiation process indicated by **STERILE R** on the label or ETO Sterilization Process indicated by **STERILE EO** on the label. Packaging must be carefully checked for perforation or other damage prior to surgery.

8. **STERILISATION:**

Endofit stem and Adler modular heads are sterilized by gamma irradiation. Moduloc Bipolar Cups are sterilized by ETO sterilization. Stem Centralisers and Cement Restrictors are sterilized by gamma irradiation. The components of system are supplied in pre-sterile condition to a Sterility Assurance Level (SAL) of 10^{-6} . The method of sterilization is noted on the package label.

Sterility and Handling:

- Correct handling of the implants prior to and during surgery is decisive for the success of surgical procedure. Implant components supplied in pre-sterile condition are individually packed in correspondingly labeled, as gamma irradiation sterilized (gamma sterilization, 25 kGy min) or ETO sterilized.
- Prior to opening a sterile packed implant, verify that the package is undamaged and shows no signs of tampering, the "sterile" sticker that seals the outer box is intact, the sterility indicator button is of the right colour indicating a properly sterilized implant (red in case of Gamma Irradiation and Green in case of ETO sterilization) and that the implant is within the sterility period indicated on the label.
- Ensure that the surfaces of the implants are not damaged under any circumstances. Under no circumstances should the implants be used that have been damaged, surgically implanted or removed.


9. **STORAGE CONDITIONS:**

Store in dry place. Protect devices from exposure to direct sunlight, radioactive sources and rains.

10. **IMPORTANT INFORMATION:**

The operative surgeon is responsible for carrying out the surgical procedure correctly and must have mastered the acknowledged updated and latest operating techniques related to the type of surgery being performed, in theory and practice. Complications due to incorrect diagnosis and operating technique and limitations of the method of treatment or lack of aseptic conditions are not the responsibility of the manufacturer



	Instructions for use for Adler™ Cemented Bipolar hemi-arthroplasty Prosthesis	Doc. No.: IU/10a
		Rev. No.: 01
		Rev. Date: 10FEB2022

















In addition to physiotherapy and muscle training, it is the responsibility of the operating surgeon to educate the patient about the limitations of metallic implants and precautions to be followed to avoid unnecessary stresses to the implant.

Detailed instructions must be given to the patient concerning the use and limitations of the implanted device. If partial weight bearing is required or recommended, the patient must be warned that loosening, bending and / or breakage of the device are complications which may occur due to early or excessive weight bearing or muscular activity. The patient should be warned to avoid falls or sudden jolts of any nature. If the patient is demented, debilitated or otherwise unable to use crutches or other supporting devices, the risk of loosening, bending and / or breakage may be increased. The patient must be made aware of this fact.

Any retrieved implant / External Fixator component should be treated in such a manner so as to render further use / re-use of the components, impossible. Used implants / External Fixator Component that appear undamaged may have internal and external defects caused through accumulated stresses while in use. Reuse of implant components to premature failure.

Implant components from one manufacturer should not be used with those of another.

11. Symbols Used in IFUs, Labels and Packaging Materials

Symbol	Definition	Symbol	Definition	Symbol	Definition
	Single use (Do not re-use)		Batch Number		Keep away from heat /sunlight and radioactive sources
	Date of Manufacture YYYY-MM		Manufactured by		Use by Date (Date of Expiry) YYYY-MM
	Sterilized by irradiation		Do not re-sterilize		Do not use if package is opened or damaged
	Caution: check for specific warnings or precautions		Consult instructions for use		Avoid moisture or water contact
	Sterilized by ETO Gas Sterilization process		Code Number / Part No.		To be sold only against prescription
	Recycle				

12. Further information:

For further information concerning use of these devices, please check with Adler Customer Service at the address given herein or e-mail to adler-customer.care@adler-healthcare.com.

Manufactured by:



Adler Healthcare Pvt. Ltd.

Plot No. A-1, MIDC Sadavali, Tal. Sangameshwar, Dist. Ratnagiri, Maharashtra State, INDIA, PIN 415804. Ph: +91 (0)8055136000, 8055146000