

# Intra-Operative disinfection of bone prosthesis

## Summary

Profile type	Company's country	POD reference
<b>Technology offer</b>	<b>Spain</b>	<b>TOES20230703006</b>
Profile status	Type of partnership	Targeted countries
<b>PUBLISHED</b>	<b>Research and development cooperation agreement</b> <b>Commercial agreement with technical assistance</b>	<b>• World</b>
Contact Person	Term of validity	Last update
<a href="#">Anita ABOLA</a>	<b>3 Jul 2023</b> <b>2 Jul 2024</b>	<b>3 Jul 2023</b>

## General Information

### Short summary

A Spanish research team specialized in the field of Engineering, has developed and patented a device, system and activation procedure for intraoperative disinfection of bone prosthesis through bioelectric effect. A company willing to implement and commercialize the technology through a license agreement or a technical agreement is sought.

### Full description

The Andalusian research team belongs to the University of Málaga and works in the field of engineering.

Some of the activities carried out by the research group are focused on the field of robotics, artificial vision and ambient intelligence. Particularly they have developed and patented a system for the prevention and intraoperative elimination of infections in knee prostheses.

The treatment of bone prosthesis infections is complex, long and expensive. Traditionally, it consists of washing and replacing mobile components in recent implant infections (between three and six weeks after surgery), using antibiotic-impregnated cements, and intraoperative irrigation. However, the biofilm can maintain a state of hibernation for long periods of time, which makes it significantly difficult to detect using traditional techniques. After the aforementioned initial period after surgery, the treatment of infections generally requires the complete replacement of the implant in a single surgery or, alternatively, a first replacement with a temporary component that, after a minimum

period of six weeks, is replaced in a second intervention by a definitive implant. The first method has a success rate of between 50-55%, while the second increases to 70-90%. Despite this, in any of the cases these methods have an enormous physical and psychological cost for the patient, in addition to a high economic cost, which in the case of knee prostheses is estimated at around twenty billion dollars worldwide. , corresponding to infection between 1%-2% of cases, which means approximately three hundred thousand infected prostheses per year. Additionally, it should be noted that a significant number of infections are not resolved with these methods, which can lead to amputation or even death of the patient. The most recent studies indicate that the five-year mortality after a prosthetic infection rises to 25.9%, compared to 12.0% in patients without infection.

Thus, there is a need in the present technical field to develop improved prosthesis disinfection devices and procedures, based on the bioelectric effect, that allow their application to in vivo techniques in reduced times compared to the known methods of the state of the art. The present invention is aimed at satisfying this need, by means of a novel device, a system and a procedure for intraoperative disinfection of bone prostheses, whose preferred application is the treatment of knee prostheses, but without limitation to its use in other types of implants.

Companies in the medical sector that wish to implement and commercialize the technology via license agreement or want to explore the new possibilities in the field of orthopedic surgery through technical agreement are sought

#### Advantages and innovations

The treatment of infections of bone prostheses is complex, long and expensive. Traditionally, it consists of washing and replacing mobile components in recent implant infections (between three and six weeks after surgery), using antibiotic-impregnated cements, and intraoperative irrigation. However, biofilm can maintain a hibernating state for long periods of time, which makes it significantly difficult to detect using traditional techniques. After the aforementioned initial period after surgery, the treatment of infections generally requires the complete replacement of the implant in a single surgery or, alternatively, a first replacement with a temporary component that, after a minimum period of six weeks , is replaced in a second intervention by a definitive implant. The first method has a success rate of between 50-55%, while the second increases to 70-90%. Despite this, in any of the cases, these methods have an enormous physical and psychological cost for the patient, in addition to a high economic cost, which in the case of knee replacements is estimated at around twenty billion dollars worldwide. , corresponding to infection between 1%-2% of cases, which means approximately three hundred thousand infected prostheses per year. Additionally, it should be noted that a significant number of infections are not resolved with these methods, which can lead to amputation or even the death of the patient. The most recent studies indicate that 5-year mortality after a prosthetic infection rises to 25.9%, compared to 12.0% in patients without infection. The developed system does not require the use of special prostheses and is used only during an intervention for disinfection. Other related systems based on bioelectrical effects use modified prostheses or implanted electrodes.

Technical specification or expertise sought

Stage of development

**Under development**

Sustainable Development goals

**• Goal 3: Good Health and Well-being**

## IPR Status

**IPR applied but not yet granted**

## Partner Sought

## Expected role of the partner

Type: The team is looking for industrial partners interested in implementing and commercializing the technology worldwide. Companies that want to enter into a licensing agreement or alternatively technical agreement, in order to explore the new possibilities in the medical sector are sought.

Role of partner: companies that wish to obtain patent rights as a licensee to implement and commercialize the technology at international level.

## Type of partnership

**Research and development cooperation agreement****Commercial agreement with technical assistance**

## Type and size of the partner

• **SME <=10**• **SME 11-49**• **SME 50 - 249**

## Dissemination

## Technology keywords

- **06001013 - Medical Technology / Biomedical Engineering**
- **06001012 - Medical Research**
- **06001024 - Medical Biomaterials**

## Targeted countries

- **World**

## Market keywords

- **05003003 - Surgical implants**

## Sector groups involved

- **Health**