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MEDICINE

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Clinical Sciences Lund
Department of Orthopedics
Lars Lidgren

To
The Olav Thon Foundation

I am hereby sending the second interim report and request for the third grant payment for the year 2023.

PI
Lars Lidgren
Professor
Lund University

Second project progress report for the period: 2022-04-01 to 2023-05-31

Project Title:

[New local treatment of osteoporotic hip fractures
A Regenerative Medicine Approach to Improve Implant Anchorage in Fragile Bone and
Reduce Reoperations](#)

PI: Lars Lidgren, Lund University, Sweden

*Co-PI's: Ming Ding, South Denmark University, Odense. Magnus Tägil and Deepak Raina,
Lund University, Sweden*

Osteoporosis leads to bone deterioration over time, which make patients prone to fragility fractures. Fragility fractures also impair the quality of life of the patients and increases their risk of early mortality. Pharmacological treatment in the aftermath of fracture fixation may reduce the long-term risk of a new fracture. Most osteoporotic fractures are stabilized using metal implants. Due to the low mechanical quality of the diseased bone, the anchorage of these implants often leads to the failure of the implant fixation necessitating a re-operation.

We reported in the first report 2022-04-01 on how an injectable ceramic biomaterial improved the immediate fracture fixation. With advanced imaging methods we explained how the ceramic composite protected fragile cancellous bone from fracturing. We developed a combined fragility and mortality index for patient selection in the clinical study. (Ref 1-3)

During the last year, we published a clinical study using bone densitometry and CT, showing that ceramic augmentation in trochanteric fractures fixation combined with systemic bisphosphonates increased the bone regeneration. (Ref 4)

Lars Lidgren

email: lars.lidgren@med.lu.se

In a biomechanical study we tested a different fixation device verifying the method. (Ref 5)
Using a donated osteoporotic spine, we could show that augmentation of the screws biomechanically improved the fixation strength. (Ref 6)
In a meta-analysis, we compared the two leading devices for fixation of trochanteric hip fractures and reported no clinically important differences. (Ref 7)

Two PHD students are in the final stage of finishing their thesis on hardware augmentation of trochanteric and spinal osteoporotic fractures. The thesis will be defended in the fall 2023. In our first RCT study on ceramic augmentation in trochanteric fractures, all patients have been operated and been included. The follow up will close in Q 2 2024.

The large animal device study (osteoporotic sheep) in Odense is going as planned. The analysis has started, and the report is expected in December 2023. This is also part of third PhD program.

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