



Ossis's pioneering 3D titanium implants revolutionising orthopaedic surgeries

Custom-designed implant innovations are helping patients with severely damaged bone and joints, or facing permanent disability or amputation, to regain mobility and independent lifestyle

Press release, 10 December, 2014, Christchurch, NZ – Ossis Ltd is revolutionising orthopaedic surgeries by using advanced 3D technology to custom design and manufacture world leading titanium bone and joint implants. These implants are not only breaking new ground, they are beyond the research stage, proven, accredited, and with over 55 successful operations to date. Ossis's first patient - who we believe was the first in the world to receive a 3D printed titanium implant - is fit and well, with the bone fully healed seven years after her operation.

Since 2007 this Christchurch New Zealand company has been quietly innovating with new 3D design and printing technology, creating highly advanced titanium alloy implants that help severely disabled people to regain their mobility and independence. Each Ossis implant is unique and custom-designed to the millimetre to replace damaged bone and joints that off-the-shelf technology cannot. Moreover, surgical time is significantly reduced with this new technology.

Madeleine Martin, Ossis General Manager, explains that with people living longer and a rising rate of obesity there's an escalating demand worldwide for joint replacement and revision surgeries. "People are requesting joint replacements at a younger age, and with increasing functional expectations post-surgery. Age, genetics and obesity are not the only factors that can initiate progressive wear and tear on our bones and joints; our more extreme lifestyles often result in trauma."

A New Zealand current affairs programme, Seven Sharp, followed two patients that recently received Ossis implants. Evelyn, 67, was born with a genetic hip disorder and had her first hip replacement aged 37. She needed a third left hip replacement, as her implant had failed and she had bone loss. An 'off-the-shelf' solution was considered but the risk of failure would have been high. According to her surgeon, the anterior and medial walls of her hip socket had worn very thin. It was felt that a custom Ossis titanium alloy implant would better fill the defect than any other solution. It could also be secured to the pelvis with strategically placed screws mapped out by the computer modelling. Amazingly, Evelyn was discharged just four days after her operation and was allowed to place full weight on her new implant.

The other patient interviewed on Seven Sharp was Pamela, 74, who due to the complexity of her condition, would have likely spent the rest of her life in pain and unable to walk had it not been for an Ossis implant.

Pamela's earlier revision hip replacement had failed, as the socket had broken through the inner and front wall of her pelvis, to lay next to the sacroiliac joint. The top three centimetres of her femur had eroded away. Due to her hip and a concurrent tibial bone infection Pamela was hospitalised for five months on antibiotic treatment. Her surgeons agreed that conventional revision surgery using current implant technology would not be satisfactory, as her bone loss was too great, the hole was also too large, and the poor quality of bone would not allow conventional screw systems to hold her body weight. Her best hope would be an Ossis pelvic and hip implant with an infection resistant coating.



Above: X-ray's showing Pamela's damaged hip joint implant prior to surgery (left), 3D plastic models of the new implant and hip bone (centre), the final 3D printed titanium implant, and her new Ossidis implant in position (right)

Both Evelyn's and Pamela's operations were very successful and, as shown on Seven Sharp, both patients are well and - while they continue their orthopaedic rehabilitation - they are able to walk again without pain, and taking full weight through their new hips.

Martin says, "What we are able to achieve for patients like Evelyn and Pamela is truly exciting, and we are getting increasing interest and enquiries from surgeons as a result. It is thanks to advances in 3D technology that we can custom design unique titanium implants and change lives.

"Instead of surgeons piecing together off-the-shelf products during an operation and cutting away valuable bone to make an implant fit, we can work with surgeons to design the perfectly fitting implant prior to the operation. We then create an exact plastic model of the implant on our 3D printer to allow the surgeon to practise on and refer to in surgery. This process significantly reduces the operation time and makes life a lot easier for the surgeon. Nearly all of these extremely complex salvage procedures have been successful or highly successful as measured by patient satisfaction, and the patient and clinical outcomes are excellent with faster recovery times and reduced post-op care and revisions."

To manage the growth in interest Ossidis has doubled its headcount in the last 18 months to twelve and will be moving to larger offices in Christchurch early next year. "We are getting very busy and have a lot of new skeletal reconstruction projects in the pipeline with more and more enquiries coming in," says Martin. "We're committed to achieving the best clinical and patient outcomes, and we are continuing to evolve our technology so we can make more impossibles possible."

About Ossidis Ltd

Ossidis, founded in 2007 by directors James Burn and Paul Morrison, designs and manufactures medical devices and custom implants that are individualised to specific patients and used in orthopaedic reconstruction, spinal and maxillo-facial surgeries. The company has successfully completed a wide range of projects in New Zealand and Australia, including acetabular revisions, hemi-pelvis replacements, spinal, cranial maxillo-facial, small-joint implants and fracture fixation devices. The implants are available to all approved revision hip surgeons in these countries. For more information visit www.ossis.com



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