PEEK-OPTIMA™ POLYMER KNEE – A More Natural Solution to Total Knee Replacement

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Total Knee Replacement Satisfaction Levels

According to the Organization for Economic and Co-operation Development (OECD) health statistics, in 2015, there were approximately 2.6 million total knee replacement (TKR) surgeries reported for the 35 member countries.[1] Yet, a significant number of people who have undergone TKR are unhappy with the results.[2] An estimated 20% of TKR patients, totaling about 520,000 worldwide, are unsatisfied.[2-3]

Why are Patients Dissatisfied?

The literature proposes various reasons for TKR dissatisfaction, but little is proven.[4-5] One researcher linked positive patient expectation to improved outcomes.[4] Moreover, fulfilling kneeling, squatting and stair climbing expectations correlated highly with satisfaction.[4] In fact, preparing patients for surgery and setting an expectation of recovery timeframes and outcomes resulted in a 5% improvement in patient satisfaction.[4]

Surgical precision and materials used may also play a part in patient satisfaction levels. Some unsatisfactory TKR results were due to primary malalignment of the femoral component.[5] Different femoral component materials can also affect a patient's ability to perform normal daily activities post-operatively. TKR patient feedback across social media and forums listed TKR post-operative side effects ranging from knees feeling heavy or loose, to being cold in the winter, to knee creaking, popping or rattling, which may all potentially be associated with metal.

Introducing the PEEK-OPTIMA Polymer Knee Implant

The PEEK-OPTIMA Knee Implant has been developed with these problems in mind. It offers surgeons and patients a femoral component that has the potential to improve both operative procedure and post-operative outcome. Most importantly the goal is to improve a patient's quality of life.

"Patients want two things... one is obvious relief from pain, but more importantly they hope that their replacement knee will last."

Dr Hemant Wakankar[6*]
Orthopedic Surgical Consultant
Devchhaya Clinic
Maharashtra, India

Pre-clinical testing has demonstrated the potential for a femoral component made of PEEK-OPTIMA to offer equivalent performance to metal, while maintaining the benefits of a non-metallic solution.[6] PEEK-OPTIMA exhibits properties closer to cortical bone than metal or ceramic materials, including its elastic modulus and density, and may offer a more natural solution to knee replacement.[7-8] Used in approximately nine million implanted devices worldwide, including spinal cages and bone anchors, PEEK-OPTIMA has a strong clinical history with patients benefitting from this less stiff material.[9]

"Invibio is best placed to lead the development of a new innovative knee replacement solution because they have been successful in other areas and other arenas."

Dr Asit Shah[11*]
Orthopedic Surgical Consultant
Englewood Orthopedic Associates
Englewood, NJ

"Technically it's very challenging but it's a very innovative concept and that's going to stimulate the team to rise to that challenge."

Professor John Fisher CBE[*]
Director Institute of Medical & Biological Engineering
University of Leeds

"It will give designers a real opportunity in the future to change the way that we think about knee replacements."

Dr Jon Conroy[12*]
Consultant Orthopedic Surgeon
Harrogate District General Hospital
North Yorkshire, England

Based on this pre-clinical work, a pathway for clinical trials to demonstrate PEEK-OPTIMA Knee's safety and clinical efficacy has been provided. These trials will assess post-operative knee performance and patient satisfaction levels. We are confident clinical trial results will show PEEK-OPTIMA Polymer Knee improves TKR outcomes and patient quality of life, while raising the bar for patient care. ▲

ABOUT THE AUTHOR

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Dr Ian Revie is Invibio Biomaterial Solutions' EU Developing Markets Marketing Leader responsible for the PEEK-OPTIMA Knee program. Prior to Invibio, Dr Revie was CEO for Activ4Life Healthcare Technologies where he patented a novel patient monitoring application focused on orthopedics. Previously, Dr Revie held progressively responsible roles in Johnson & Johnson's orthopedics business where he was credited for turning technical visions into commercial success. In 1995, Dr Revie received his PhD in biomechanical engineering from Queen's University, Belfast, Northern Ireland.

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10. Data on file with Invibio Biomaterial Solutions, Invibio Ltd.
11. Since 2012, Dr. Asit Shah, has provided ad hoc consultancy services to Invibio Ltd.
12. Since 2014, Dr. Jon Conroy, has provided ad hoc consultancy services to Invibio Ltd.

*The testimonials presented have been provided by practicing orthopedic surgeon(s) and researcher(s). Their view and experiences are their own and do not necessarily reflect those of others. "Invibio" disclaims any liabilities or loss in connection with the information herein.

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