

Professor Robin Ling was an orthopaedic surgeon with a specialist interest in hip surgery. He was an enlightened innovator and scientist whose contribution to hip replacement surgery has improved the quality of life for millions of people around the world.

Robin studied medicine at Magdalen College, Oxford and St Mary's hospital, London, qualifying in 1952. After he passed his surgical Fellowship in 1957 he returned to Canada as Medical Director of the Emergency Department at Vancouver General Hospital but came back to the UK in 1959 to complete his orthopaedic training in Edinburgh. His first Consultant appointment was at Princess Margaret Rose Hospital and the Royal Infirmary Edinburgh in 1961.

Robin became interested in hip replacement surgery following his appointment as a consultant orthopaedic surgeon at the Princess Elizabeth Orthopaedic Hospital in Exeter in 1963.

He approached Dr. Clive Lee, an engineer at the University of Exeter, to design a hip stem with a profoundly different geometry to those available at that time. His aim was to optimise fixation of the implant and thereby the long-term success of each hip replacement.

The first Exeter hip was inserted in 1970. It is now the most frequently used cemented hip replacement in the world, with more than one million operations undertaken by the end of 2010. Over 100,000 hip stems are now used each year and such is the long-term success of the implant it is likely that by the 50<sup>th</sup> anniversary of its inception more than 2 million stems will have been inserted. The device has been shown to work well in patients of all ages no matter the shape of their anatomy or the cause of their arthritic hip.

Robin's observation of how the implant functioned led to collaborative research in the laboratories at the University of Exeter. A philosophy of "taper-slip" fixation ensued; all major hip manufacturers now sell an implant that functions in this way. His explanation of how cemented stems work is included in all orthopaedic reference texts about hip replacement.

Robin also developed sophisticated cementing techniques to improve fixation of the implant to the skeleton. These techniques are used in contemporary practice and continue to be taught at Exeter symposia and workshops around the world.

Despite the success of most types of hip replacement the growing popularity of the operation resulted in increased numbers of patients requiring re-do surgery. The most common cause for failure was loss of fixation of the implant, often with significant erosion of bone stock. Robin developed a technique known as Femoral Impaction Grafting during which allograft bone graft is impacted into the deficient femur. Reviews proved that when this technique was used with a cemented taper-slip stem, host bone reforms and many years of continued pain-free activity result in most cases.

Robin's interest in hip surgery did not prevent him contributing in other areas of professional life:

He sat on numerous editorial boards and chaired many regional and national Committees.

He was President of the British Orthopaedic Research Society, 1979-80; President of the British Orthopaedic Association, 1986-87; President (and co-founder) of the British Hip Society, 1991-93; President of The International Hip Society, 1997-99

He was appointed Honorary Professor of Bioengineering in the School of Engineering at the University of Exeter.

He was awarded Visiting Professorships in Louisiana State University, University of Arizona, Tucson; The Chinese University of Hong Kong; University of California at San Francisco; Baylor College of Medicine, Division of Orthopaedic Surgery, Houston, Texas; Henry Ford Memorial Hospital, Detroit, Michigan; University of Iowa; Mayo Clinic and Foundation, Rochester, Minnesota; University of Pittsburgh; Santa Casa de Misericordia de Sao Paulo.

He was appointed Officer of the Order of the British Empire in January 1992.

He was hugely admired both professionally and personally by those who were fortunate enough to meet him or work with him. His personal warmth, generosity and modesty are legendary.

**Professor Robin Sydney Mackwood Ling. Born September 7<sup>th</sup> 1927, died October 9<sup>th</sup> 2017.**

