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The Cathcart elliptical orthocentric endoprosthesis. A long-term clinical and radiographic study.

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Italian Journal of Orthopaedics and Traumatology, 28 Feb 1989, 15(1):5-14

PMID: 2661497

Review

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Abstract

In 1971 Cathcart proposed the use of an elliptical head for the femoral endoprosthesis, based on his anatomical studies which had proved that the normal femoral head is elliptical and not spherical. Important biomechanical studies have also shown that the periacetabular trajectory system also assumes an elliptical gothic arch shape during stress loading (Fischer and Olivier, 1979). The authors therefore decided to use an elliptical head because it improves lubrication and therefore nourishment of the acetabular cartilage, and because it better distributes the load. Between 1977 and 1987 121 endoprostheses were implanted, of which 92 were followed up after an average of 5 years. The follow-up showed that good results may be obtained with this type of prosthetic head, and in particular that there was almost no acetabular erosion and only a moderate decrease in the joint space. These results show that the elliptical head is better adapted to the acetabulum during load as compared to the spherical head, and is therefore better at safeguarding the osteoarticular structures with which it articulates. The authors therefore regard it as superior not only to the spherical head, but also to the so-called bipolar double-hinge prostheses.

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