



Title **A Systematic Review of the Effectiveness and Cost Effectiveness of Metal-on-metal Hip Resurfacing Arthroplasty for Treatment of Hip Disease**

Agency **NCCHTA, National Coordinating Centre for Health Technology Assessment**
Mailpoint 728, Boldrewood, University of Southampton, Southampton SO16 7PX, United Kingdom
tel: +44 2380 595586, fax: +44 2380 595639

Reference Health Technol Assess 2002;6(15). June 2002. www.ncchta.org/execsumm/summ615.htm

Aim

To assess the effectiveness and cost effectiveness of metal-on-metal hip resurfacing arthroplasty compared with watchful waiting, total hip replacement (THR), osteotomy, arthrodesis, and arthroscopy of the hip joint.

Conclusions and results

- Evidence with which to assess the benefits of metal-on-metal hip resurfacing arthroplasty compared with the other interventions was limited. Over a 3-year followup period, 0% to 14% of patients who received metal-on-metal hip resurfacing arthroplasty required a revision. In comparison, those managed by watchful waiting avoided an immediate operation, but had a 30% chance of an operation over 3 years. THR was associated with revision rates of 10% or less over a 10-year followup period, while revision rates for osteotomy were, between 2.9% and 29% over a period of 10 to 17 years. The estimated revision rates for patients receiving arthroscopy were slightly higher than those for metal-on-metal hip resurfacing arthroplasty. No data were identified reporting revision rates following arthrodesis.
- Patients who underwent metal-on-metal hip resurfacing arthroplasty experienced less pain than those who were managed by watchful waiting, with data from one study suggesting that 91% of patients were pain free at 4 years. This compares with an estimate of 84% at 11 years for THR, 22% for arthrodesis at 8 years, and fewer patients pain free following arthroscopy. Similar data for osteotomy were not available.
- The cost of metal-on-metal hip resurfacing arthroplasty for a patient aged under 65 years was estimated to be £5515 (2000/2001). Other estimated intervention costs were: £4195 for THR, £6027 for revision THR, £951 for arthroscopy, and £2731 for osteotomy. The annual cost per patient for watchful waiting was estimated at £642.
- Results for patients under age 65 years at treatment showed that metal-on-metal hip resurfacing arthroplasty was dominated (ie, more costly with the same or less benefits) by THR, owing to the assumptions about metal-on-metal revision rates and the lower cost of THR. Metal-on-metal hip resurfacing arthroplasty dominated (ie, generated cost savings and the same or more benefits) the watchful waiting alternative within a 20-year followup period.

Recommendations

The low quality of life experienced by young people with hip disease who have been advised to delay undertaking THR means that if metal-on-metal hip resurfacing arthroplasty can be proven (i) to have lower revision rates than THR over an extended period and (ii) to result in better outcomes from subsequent THR, then such a procedure could possibly be considered cost effective or even dominant. If metal-on-metal revision rates are sufficiently below those for primary THR, then metal-on-metal hip resurfacing arthroplasty could possibly be judged cost effective for older people who are more active and may outlive a primary THR.



Title **A Systematic Review of the Effectiveness and Cost Effectiveness of Metal-on-metal Hip Resurfacing Arthroplasty for Treatment of Hip Disease**

Agency **NCCHTA, National Coordinating Centre for Health Technology Assessment**
Mailpoint 728, Boldrewood, University of Southampton, Southampton SO16 7PX, United Kingdom
tel: +44 2380 595586, fax: +44 2380 595639

Reference Health Technol Assess 2002;6(15). June 2002. www.ncchta.org/execsumm/summ615.htm

Methods

A structured search of electronic databases, websites and relevant audit databases between 1990 and 2001 used free text terms to identify potentially relevant papers evaluating metal-on-metal hip arthroplasty, osteotomy, arthrodesis, and arthroscopy.

A search was also carried out for randomized controlled trials (RCTs) of THR and systematic reviews of RCTs for THR. A Markov model comparing the comparators was developed, using the results of the review of effectiveness data together with data on costs from previous studies.

Further research/reviews required

All the limited data available and results obtained by modeling these data indicate that metal-on-metal hip resurfacing arthroplasty merits further investigation. The lack of any controlled studies comparing it with any of the comparators (but principally watchful waiting and THR) should be addressed in trials with long-term followup. Any comparison with watchful waiting is hampered by the absence of long-term data on metal-on-metal hip resurfacing arthroplasty, health outcome data following revision, and virtually any data on watchful waiting. Research is required to define more clearly what watchful waiting entails and how its outcomes compare with the other comparators, especially metal-on-metal hip resurfacing arthroplasty.