

#671 - Systematic Review

Rate Of Total Hip Arthroplasty In Patients With Legg-Calve-Perthes Disease After Conservative Or Surgical Treatment: A Systematic Review And Meta-Analysis

Orthopaedics / Paediatric Orthopaedics / Hip

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Background

The rate of total hip arthroplasty (THA) in patients treated for Legg-Perthes-Calvé disease (LCPD) is unknown.

Objectives

This systematic review and meta-analysis aimed 1) to evaluate THA rate in LCPD patients treated conservatively or surgically; 2) to determine factors influencing THA rate (age, treatment modality, Stulberg classification, years of follow-up); 3) to evaluate the incidence of hip pain (HP) and osteoarthritis (OA) according to type of treatment, and to assess whether they are directly related to THA rate.

Study Design & Methods

Long-term follow-up studies on conservative and surgical treatment of LCPD (1950-2021) were identified from 6 public databases (PubMed, Embase, OVID, Web of Science, Scopus and Cochrane Library).

Articles were screened and abstracted by two investigators according to PRISMA guidelines; the search strategy identified 8730 articles, of which 4092 were duplicates, and 3223 and 1331 were excluded based on title and abstract, respectively. Among the 84 remaining articles, 3 were excluded because full text could not be found, 48 because THA rate was not mentioned or could not be extracted, and 9 because patients could not be grouped into conservative and surgical group. Four additional articles were obtained from citation tracking and were added to the selected 23 publications.

Overall, 27 publications were included and their quality was assessed according to MINORS criteria; R-version 4.1.3 software was used for statistical analysis.

Results

Overall THA rate was 6.8% (95%CI, 0.0389-0.1030; I²=52%) in patients treated conservatively and 5.45% (95%CI, 0.0349-0.0773; I²=38%) in those operated.

In patients <7 years at the onset of the disease THA rate was 6.67% (95%CI, 0.0332-0.1292; I²=59%) after conservative treatment and 6.17% (95%CI, 0.0283-0.1047; I²=43%) after surgery; it was 16.97% (95%CI, 0.0000-0.3695; I²=85%) and 3.61% (95%CI, 0.0067-0.0665; I²=39%) in patients >7 years, respectively.

THA rate was 4.91% (95%CI, 0.0241-0.0823; I²=0%), 5.19% (95%CI, 0.0293-0.806; I²=0%) and 23.18% (95%CI, 0.0888-0.3748; I²=79%) in patients treated conservatively with ≤30, 30-40 and >40 years of follow-up, respectively; it was 3.68% (95%CI, 0.0014-0.0512; I²=37%), 3.11% (95% CI,

0.0114-0.508; $I^2=7\%$), 9.66% (95%CI, 0.0000-0.2310; $I^2=60\%$) and 17.92% (95%CI, 0.0896-0.2888; $I^2=0\%$) in those operated with ≤ 10 , 10-20, 20-40, and >40 years of follow-up, respectively. The overall rate of PH and OA in patients managed conservatively was 66.99% (95%CI, 0.4240-0.8767; $I^2=87\%$) and 36.7% (95%CI, 0.1760-0.5812; $I^2=94\%$), while it was 27.85% (95%CI, 0.1630-0.4097; $I^2=84\%$) and 23.37% (95%CI, 0.0704-0.4486; $I^2=93\%$) in those operated. Following conservative treatment, THA was 5.79% (95%CI, 0.0000-0.6127; $I^2=76\%$) in patients with Stulberg I-II and 5.29% (95%CI, 0.0005-0.1521; $I^2=0\%$) in Stulberg III-IV-V.

Conclusions

Patients with LCPD have a higher incidence of HP and OA in adulthood than THA rate, which is relatively low and with minimal difference between treatment modality. The higher the age at onset and the longer the follow-up, the higher the THA rate; Stulberg classification was not directly associated with THA rate.