

Collared Versus Collarless Hydroxyapatite-Coated Stems For Primary Cementless Total Hip Arthroplasty; A Systematic Review Of Comparative Studies. Is There Any Difference In Survival, Functional And Radiographic Outcomes?

Orthopaedics / Pelvis, Hip & Femur / Joint Replacement - Primary

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Keywords: Total Hip Arthroplasty (THA), Corail, Stem, Collar, Cementless, Outcomes

Background

Straight uncemented, fully hydroxyapatite-coated stems are increasingly used in primary total hip arthroplasty (THA). The uncemented Corail stem has an extensive hydroxyapatite coating and demonstrated reproducible and excellent long-term outcomes. This stem is available in collared or non-collared options. Recently, the literature demonstrated different outcomes between collared and collarless Corail stems.

Objectives

This systematic review aims to assess the literature regarding the comparative studies between collared and collarless Corail stems in primary THA to find differences in revision rates, radiographic and clinical outcomes, and postoperative complications between these two types of the same stem.

Study Design & Methods

The studies were found by searching PubMed, Science Direct/Scopus, and the Cochrane Database of Systematic Reviews from conception till May 2023. The PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines were followed. The investigation encompassed comparative studies, randomized controlled trials, case series, cohort studies, and observational clinical studies that assessed at least one comparative survival, radiological, functional outcome, or complication between collared and collarless Corail stem.

Results

Twelve comparative studies were finally included in this systematic review. A total of 90.626 patients undergoing primary THA were included, yielding data for 99.024 stems. There were 40.441 collared and 58.543 collarless stems. The follow-up of the included studies ranged from 12 to 360 months. Our study demonstrated no significant difference in stem revision relative risk (RR) [RR=0.68; 95% Confidence Interval (CI), 0.23, 2.02; p=0.49] and in the number of radiolucent lines [RR=0.3; 95% CI 0.06, 2.28; p=0.29] between collared and collarless stems. Subsidence was significantly greater in collarless stems, with a mean difference between these two types of stem of -1.01 mm and 95%CI [-1.77, -0.25; p=0.009]. The group of collared stems demonstrated a significantly lower risk of periprosthetic fractures [RR=0.43; 95% CI 0.33, 0.57; p<0.0001].

Conclusions

The comparative studies between collared and collarless Corail stems groups showed relative survival rates, number of radiolucent lines and functional outcomes but significantly greater subsidence in collarless stems. The lower risk of periprosthetic fractures in the collared stems group must be clarified further.