



Does stem length matter?

Stem uzunluğu önemli mi?

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There are still some controversial issues regarding total hip arthroplasty including cemented vs. cementless, short stem vs. long stem. A literature review on the currently published survival results of short stems is encouraging and appears to be comparable with that of traditional uncemented stems. However, only few mid-term and long-term follow-up studies are available; studies with more patients and longer follow-up periods are needed.

Keywords: Hip arthroplasty; stem length.

Total kalça artroplastisine ilişkin hala tartışılan konular vardır: çimentolu ya da çimentosuz, kısa veya uzun stem gibi. Kısa stemlerin ömürlerine ilişkin literatür taraması sürenin geleneksel çimentosuz stemlere benzer olması nedeniyle cesaret vericidir. Ancak, orta ve uzun süreli çalışmalar az sayıdadır; daha çok hasta içeren ve daha uzun süreli çalışmalar gereklidir.

Anahtar sözcükler: Kalça artroplastisi; stem uzunluğu.

Long stems increase stress in the stem and distal stress transfer with shielding of proximal bone whereas short stems increase stress proximally, which may exceed the strength of cement or bone.^[1]

Metaphyseal-fitting short stems provide theoretical advantages compared with conventional stems decreasing proximal stress shielding, the risk of aseptic loosening and perioperative fractures.^[2]

In late eighties, a short-stemmed femoral implant differing from conventional design was used in total hip arthroplasty in Mayo Clinic.^[3] Results of 20 patients with at least one year of follow-up study was encouraging.

Bone mineral density changes around short, metaphyseal-fitting, and conventional cementless anatomical femoral components were compared in another study.^[4] Bone mineral density was significantly increased in femoral zone 1 but slightly decreased in zone 7 in the short, metaphyseal-fitting stem group. In the conventional metaphyseal- and diaphyseal-fitting stem group, bone mineral density

was markedly decreased in both zones 1 and 7. The mean follow-up was 3.35 years in both groups.

In other series with mean follow-up of 4.5-5 years; short, metaphyseal fitting cementless femoral component achieved stable fixation without diaphyseal fixation, and there was minimal bone resorption due to stress-shielding in the calcar region.^[5,6]

Seven-year data from the Australian Orthopaedic Association National Joint Replacement Registry revealed that there was no significant difference in the cumulative percent revision rate in the short stems (3.4%, 95% CI 2.4-4.8%) compared with the standard length stems (3.5%, 95% CI 3.3-3.8%) despite its use in a greater proportion of potentially more difficult developmental dysplasia of the hip cases.^[7]

Patel et al.^[8] reported that short-stem implants provide solid, dependable fixation in osteoporotic bone at minimum two-year follow-up.

Survival of the short, metaphyseal-fitting cementless anatomic stem at seven years was similar

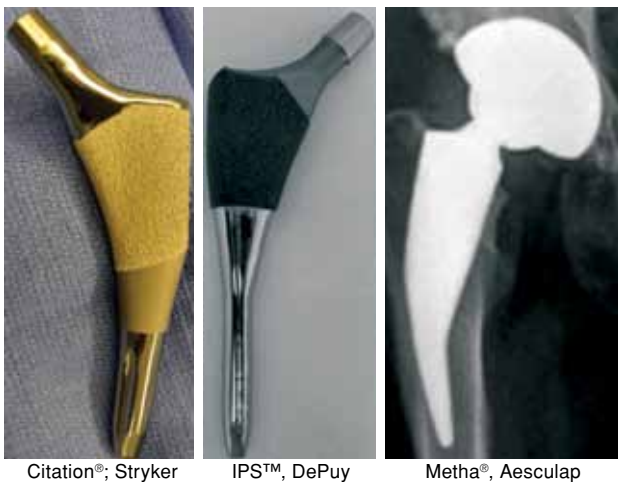


Figure 1. Several designs of short stems of different brands.

for A, B, C classes of bones (healthy and osteoporotic bones) (100%, 100%, and 98.2%, respectively).^[9]

The limited periprosthetic bone remodelling observed after a minimum of nine years follow-up suggests that this type of implant may improve mechanical stresses on host bone compared with standard stems requiring diaphyseal fixation.^[10]

There are still some controversial issues regarding total hip arthroplasty including cemented vs. cementless, short stem vs. long stem.^[11] A systematic literature review was performed to provide an overview on the currently published survival results of short stems to allow comparison with the results of traditional hip stems.^[12] The survival rate of these stems is encouraging and appears to be comparable with that of more traditional uncemented stems. However, only few mid-term and long-term follow-up studies are available; studies with more patients and longer follow-up periods are needed.

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