

# Cemented total-knee arthroplasty in rheumatoid arthritis patients aged under 60 years

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*To the Editor:* Rheumatoid arthritis (RA) is a chronic inflammatory disorder characterized by synovial hyperplasia and joint destruction. The knee is the most commonly affected joint in patients with RA, and approximately 25% of patients with RA will undergo joint replacement within 22 years.<sup>[1]</sup> Total-knee arthroplasty (TKA) is a successful treatment for patients with severe joint pain due to osteoarthritis or RA. Concerns regarding increased loosening rates and potential need for multiple revision surgeries have traditionally discouraged the use of TKA in patients under 60 years old.<sup>[2]</sup> Although results in young patients are encouraging,<sup>[3]</sup> little mid-term follow-up data are available. Other researchers focus on the controversial subject of resurfacing in TKA. Comparisons of the results in resurfaced and non-resurfaced arthroplasties have found no significant differences between the two groups, while others have argued that resurfacing of the patella should be performed routinely. Therefore, we reported the mid-term survival of a successful knee arthroplasty design in patients with RA under 60 years old and compared the difference between resurfacing group and non-resurfacing group.

The criteria for patient inclusion in the study were as follows: (1) age <60 years, (2) RA diagnosis, (3) cemented condylar prosthesis, and (4) follow-up  $\geq 2$  years. A total of 47 patients with RA (68 knees) who met the study criteria were evaluated post-operatively (47 patients underwent cemented TKA in the Orthopaedics Department of the Peking Union Medical College Hospital and were hospitalized during January 2003 to January 2008). Two patients were lost to follow-up.

All patients received cemented condylar prosthesis (16 knees: cruciate-retaining prostheses; 52 knees: posterior stabilized prostheses; 27 knees: patellar resurfacing at initial surgery and Knee Society score >20). The same protocol for post-operative management was utilized which included

low molecular weight heparin, three doses of a second-generation cephalosporin, bedside continuous passive motion machine therapy, physical therapy with partial weight-bearing, and quadriceps and hamstring strengthening exercises starting on the second post-operative day.

The radiographs were evaluated according to the Knee Society radiographic evaluation system.<sup>[4]</sup> The anteroposterior and lateral radiographs were analyzed for the presence and progression of radiolucency lines at the bone-cement interfaces and the prosthesis-cement interfaces according to the Knee Society guidelines.<sup>[4]</sup>

The clinical outcome was assessed with the passive range of motion, Hospital for Special Surgery (HSS) score, and the visual analog scale (VAS) of anterior knee joint pain during stair climbing pre-operatively and at last follow-up. The greatest value of the motion arc was measured in the supine position without weight-bearing to compare the range of motion.

Patients with at least one abnormally high value of these indexes received surgical therapy. Median disease activity level according to Disease Activity Score 28 was 5.8 (range, 3.9–6.9), which represented moderately or extremely active RA. The stratification analysis according to patellar resurfacing was further performed. There was no significant difference between resurfacing and non-resurfacing group on the above assessment.

The median HSS score improved from 43.4 (range, 10–79) pre-operatively to 95.5 (range, 49–124) at the time of the last follow-up ( $P < 0.01$ ). The median VAS score decreased from 7.59 (range, 6–8) pre-operatively to 0.25 (range, 0–2) ( $P < 0.001$ ). The overall arc of flexion improved from a median of 101.62° (range, 25°–150°) pre-operatively to 110.96° (range, 70°–150°), the extension of the knee

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decreased from a median of 14.78° (range, 0°–54°) preoperatively to 2.53° (range, 0°–10°). The stratification analysis according to patellar resurfacing was further performed. There was no significant difference observed between resurfacing and non-resurfacing group on HSS score, VAS score, and range of motion. However, both subgroups showed significantly improved post-operative HSS score compared with the pre-operative score ( $P < 0.05$ ).

The radiographic follow-up lasted 8.3 years (range, 2–33 years), with radiolucency at the bone-cement and prosthesis-cement interfaces of each component examined. The median femorotibial angle was 0.03° varus (range, –10° to 15°) pre-operatively and 1.65° varus (range, –11° to 30°) at the last follow-up. On the anteroposterior views, the average femoral component flexion angle and tibial component angle were 97.9° (range, 94°–115°) and 89.1° (range, 82°–92°), respectively. On the lateral views, the average femoral component flexion angle and tibial component angle were 2.2° (range, –10° to 15°) and 87.0° (range, 80°–95°), respectively.

Two complications occurred during the follow-up. One knee (1.5%) suffered from post-operative infection in the 13th month after surgery. The implant was removed and antibiotic-impregnated cement was filled. Revision surgery was performed 6 months later. One knee (1.5%) had transient peroneal nerve palsy but recovered after conservative therapy. No wound-related complications were reported.<sup>[5-9]</sup>

In conclusion, TKA achieved favorable clinical and radiological outcome for RA patients with age younger than 60 years. Furthermore, there was no relationship between patellar resurfacing and HSS score improvement, indicating that patellar resurfacing and denervation may have a similar effect in improving knee function. There was no significant difference in HSS score, VAS score, and range of motion between the two groups. We suggest that TKA need to be performed without delay in younger patients with RA if the surgery is necessary.

#### Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patients have given

their consent for their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

#### Conflicts of interest

None.

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