

Long term survival of High Tibial Osteotomy in a series of 456 patients

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INTRODUCTION

High tibial osteotomy is an excellent option for young patients with isolated medial compartment osteoarthritis and varus deformity. The biomechanical principle of high tibial osteotomy in medial compartment osteoarthritis is to redistribute the weight bearing forces from the worn medial compartment across to the lateral compartment to relieve pain and slow disease progression. Biopsy and second-look arthroscopic and open procedures have shown that there is re-growth of fibrocartilage in the worn medial compartment with a predilection for the ulcerated regions of wear in the weight bearing portion of the medial femoral condyle.

The purpose of this study was to examine the long-term survival of lateral closing wedge high tibial osteotomy in our large series of patients 8-19 years after surgery to determine whether the results deteriorate over time, to review the complications and to determine the positive prognostic factors for survival.

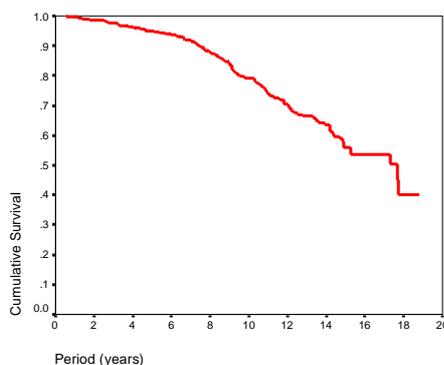
METHODOLOGY

Between 1990 and 2001, 455 patients underwent lateral closing HTO by a single surgeon for medial compartment osteoarthritis. Between 2008 and 2009 patients were contacted and completed a subjective interview. Assessment included Body mass Index (BMI), incidence of further surgery, Oxford Knee Score and the British Orthopaedic Association Patient Satisfaction Scale. A survival analysis was carried out according to Kaplan and Meier.

RESULTS

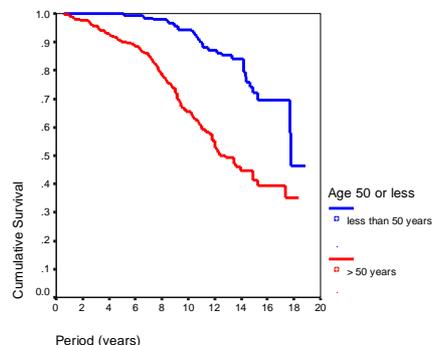
413 patients (91%) were contacted and completed the interview. A total of 129 knees had undergone further surgery and 13 patients (13 knees) died of unrelated causes. There were 326 (79%) males and 87 (21%) females. The mean age at the time of osteotomy was 50 years (range 24-70). There were 208 (50%) left and 205 (50%) right knees. The mean time to follow-up was 12 years (range 1-19 years).

The survivorship analysis showed an expected survival rate of 95%, 79% and 56% 5, 10 and 15 years after HTO (see below).

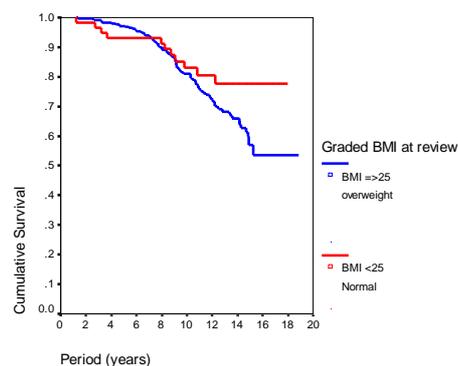


RESULTS (CONT):

Multivariate regression analysis showed that age < 50 years was associated with better survival (Hazard ratio 4.1, $p < 0.001$). Survivorship of those under 50 was 99%, 94% and 72% at 5, 10 and 15 years after HTO.



The mean BMI of the patients reviewed was 28.3 (SD 4.6, $n = 269$). Patients were classified into those with BMI < 25 and those 25 or greater, which represents overweight or obese patients for analysis. Body Mass Index of < 25 kg/m^2 was also associated with better odds of survival (Hazard ratio 1.7, $p = 0.03$). Survivorship of those with a BMI of < 25 kg/m^2 was 93%, 83% and 78% at 5, 10 and 15 years after HTO.



Of the patients who had not undergone any further surgery the mean Oxford Knee Score was 40 out of a possible 48. 90% of patients reported that they would undergo the same surgery again and 93% were satisfied or enthusiastic with the results of their surgery. There was no difference between males and females for either survival or subjective outcomes.

CONCLUSION

This study examines the largest series of patients after HTO to date. HTO is associated with excellent long term survival particularly in the younger patient. Age < 50 years and normal BMI were independent positive prognostic factors for survival. High levels of patient satisfaction can be expected over the long term. HTO should be seriously considered in carefully selected patients with degenerative change.

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