20 Year Outcome and Survival of High Tibial Osteotomy

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Background:

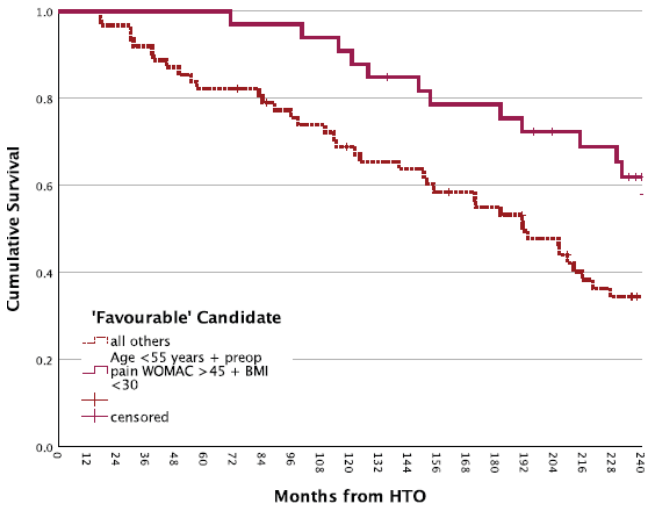
High tibial osteotomy (HTO) is a joint preserving procedure for the treatment of medial osteoarthritis. Success of HTO and survivorship beyond 10 years is rarely reported, and no published studies have included a prospective large cohort at a minimum of 20 years. The purpose of this study was to determine the 20 year survival of HTO and identify predictors of failure.

Methods:

100 consecutive patients with medial bone-on-bone arthritis were prospectively followed over 20 years with patient reported outcome measures (PROMS). Failure was defined as conversion to arthroplasty or revision HTO.

Results:

The overall survivorship of HTO at 20 years was 44%. The significant factors that were associated with better survivorship were age <55 years, body mass index <30, and Western Ontario and McMaster Universities Osteoarthritis Index pain score >45. These factors were used to define the favorable candidates. In the favorable candidates, survivorship was 100% at 5 years, after which there was a gradual decline to 62% survival at 20 years. Of those with HTO survival, 32 of 33 (97%) reported satisfaction with surgery, with a mean Knee injury and Osteoarthritis Outcome Score Pain score of 91 and Activities of Daily Living score of 97.



Conclusion:

In the surgical armamentarium to treat medial compartment OA in the adult, HTO is a safe and successful option. HTO may not permanently avoid the need for TKA, but in well selected patients it can delay the need for TKA until an age where longevity can be expected. The ideal patient for HTO has an age less than 55, a BMI less than 30 and a WOMAC score of 45 or more. In our cohort survivorship in the ideal patient was 60% at 20 years. HTO is therefore a successful method to treat medial compartment OA as well as prevent premature TKA in those who may have poorer risk of TKA longevity.

Significant Predictors of HTO Survival on Multivariate Regression Analysis[a]

		5-y Survival		10-y Survival		15-y Survival		20-y Survival			
	N	%	Δ	%	Δ	%	Δ	%	Δ	HR (95% CI)	*P*
All patients	95	88	12	77	11	63	14	44	19		
Age, y											
≥55	36	75	25	63	12	47	16	28	19	2.4 (1.4-4.3)	.002
<55	59	97	3	85	12	73	12	54	19		
BMI											
≥30	30	83	17	63	20	48	15	32	16	2.0 (1.1-3.6)	.029
<30	65	91	9	83	8	70	13	50	20		
WOMAC pain score											
<45	19	63	27	47	16	26	21	26	0	2.9 (1.6-5.3)	.001
≥45	76	95	5	84	11	73	11	49	24		

[a]Δ reflects a 5-year change in survival. BMI, body mass index; HR, hazard ratio; HTO, high tibial osteotomy; WOMAC, Western Ontario and McMaster Universities Osteoarthritis Index.