

Pneumatic Bracing for the Non-operative Treatment of Grade 3-4 Knee Osteoarthritis



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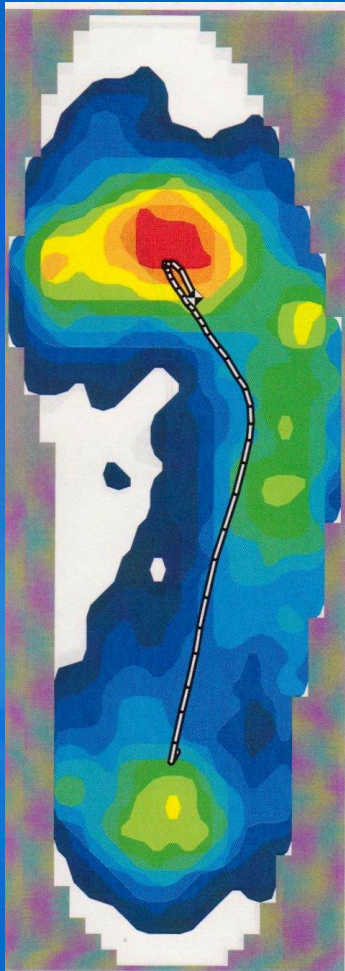
Introduction

- Purpose is to delay total knee arthroplasty with the use of a supportive knee brace
- Goals of brace:
 - Even distribution of force placed on the knee during walking
 - Strengthen knee muscles
 - Improve activities of daily living

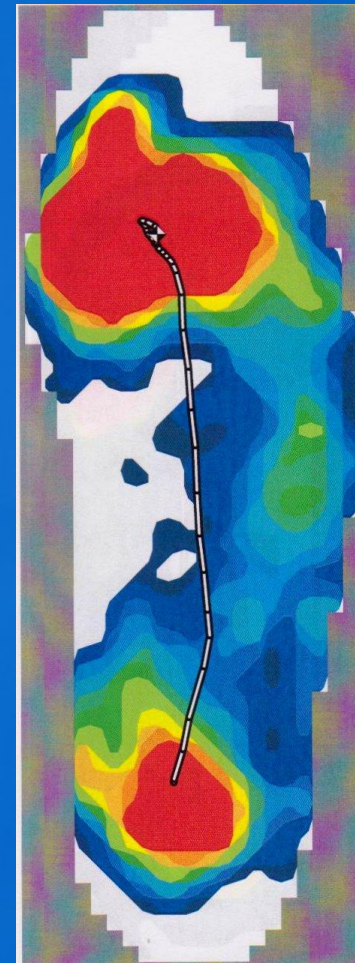
Subject	Pain Reduction (>2 points)	Decreased Medication Use?	Δ Thigh Circumference	Δ SF-36 Δ (> 5 points)	Gait Improvement (3 metrics)	Additional Injections
1					Not Enrolled Severe Valgus	
2					Lost to Follow-up Gastric Cancer	
3					Lost to Follow-up Did not return calls	
4					Lost to Follow-up 2X No-show	
5 (DF) (Compliant)	Yes	Yes		Yes	Yes (2 out of 3)	
6 (MM) (Compliant)	Yes	Yes		No	Yes (1 out of 3)	
7 (DP) (Compliant)	Yes	Yes		No	Yes (1 out of 3)	1
8 (JC) (Compliant)	Yes	Yes		No	Yes (1 out of 3)	
9					Not Enrolled Hx Aorto-bifem Graft	
10 (SB) (Non-Compliant)	Same	Slight Increase		No	Yes (1 out of 3)	
11 (AJ) (Compliant)	Yes	Yes		No	Yes (3 out of 3)	
12 (RB) (Compliant)	Same	Same		No	Yes (3 out of 3)	

Subject	Pain Reduction (>2 points)	Decreased Medication Use?	Δ Thigh Circumference	ΔSF-36 Δ(> 5 points)	Gait Improvement (3 metrics)	Additional Injections
5 (DF) (Compliant)	Yes	Yes	1 in	Yes	Yes (2 out of 3)	
6 (MM) (Compliant)	Yes	Yes	¼ in	No	Yes (1 out of 3)	
7 (DP) (Compliant)	Yes	Yes	1.5 in	No	Yes (1 out of 3)	1
8 (JC) (Compliant)	Yes	Same	Not measured	No	Yes (1 out of 3)	
10 (SB) (Non-Compliant)	Same	Slight Increase	0	No	Yes (1 out of 3)	
11 (AJ) (Compliant)	Yes	Yes	1 in	No	Yes (3 out of 3)	
12 (RB) (Compliant)	Same	Same	0.5 in	No	Yes (3 out of 3)	

Foot Pressure Pattern



Initial Visit (right foot)



3 Month Follow-up (right foot)

Summary of Gait Results

- All 7 patients with follow-up had at least 1 positive gait improvement
 - better knee extensor mechanism usage
 - greater peak to peak range of motion
 - Improved knee extension at initial contact
 - Increased Speed
 - Improved medial foot loading

Summary of Clinical Results

- All 7 had positive clinical results compared to other non-operative OA patients (pain reduction or reduction in pain medication)
 - Reduced Pain
 - Decreased medication use
 - Decreased incidence of additional interventions

Comparison to 14 patients managed non-surgically without OCSI brace

Cohort	n	Decreased Pain	Decreased Medication	Increased Thigh Circumference	Increased SF-36	Gait Improved	Additional Injections	TKA	Additional Intervention?
Brace (all followed)	7	5 (71%)	5 (71%)	5 (71%)	1 (14%)	7 (100%)	1 (14%)	0 (0%)	1 (14%)
Brace (Compliant)	6	5 83%	5 (83%)	5 (83%)	1 (17%)	6 (100%)	1 (17%)	0 (0%)	1 (17%)
Non-operative (non-OCSI)	14	1 (7%)	0 (0%)	0 (0%)	0 (0%)	0 ?? (0%)	6 (43%)	4 (29%)	10 (71%)
P-value (non-op vs. Compliant cohort)		0.002	0.0004	0.0004	0.30	0.001	0.39	0.26	0.05

Summary

- Statistically significant improvements in:
 - Pain
 - Medication use
 - Gait improvements
 - Incidence of additional interventions