suffering from increased disability and lower physical and mental health status.

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CHANGES IN KNEE PAIN, PERCEIVED NEED FOR SURGERY, PHYSICAL FUNCTION AND QUALITY OF LIFE AFTER DIETARY WEIGHT LOSS IN OBESE WOMEN DIAGNOSED WITH KNEE OSTEOARTHRITIS

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Purpose: The objective of this study was two-fold: 1) to investigate whether weight loss is associated with a reduction in perceived need for Total Knee Replacement (TKR) surgery due to decrease in knee pain and improvement in function, 2) to identify what percentage of weight loss is associated with reduction in knee pain to a point where the need for surgery could be prolonged or alleviated. 34 subjects were recruited into the study.

Methods: Women between 40 and 65 years old with morbid obesity (BMI ≥ 35 kg/m²) and osteoarthritis of the knee were pre-selected. Participants completed the Western Ontario and McMasters (WOMAC) Universities index, The Short Form Health Survey (SF-36); 6-Minute Walk Test and Timed Up and Go at baseline and participants were enrolled into a weight loss program, for a 6 month period.

Results: Repeated measures ANOVA revealed that at 6 weeks of diet the mean body weight reduction of 9.5%, was followed by a significant reduction ($p=.015$) in WOMAC scores and ($p=.038$) SF-36 sub score of physical function. At 3 months of diet a significant reduction of 16.5% in body weight corresponded to a significant decrease of 37% in knee pain and 56% in perceived need for surgery.

Conclusion: These results suggest that an initial loss of 16.5% of body weight for obese individuals was significant enough to reduce pain and postpone patient's intent to have surgery in 56%. Even though a weight loss of 16.5% might influence a patient's choice to undergo TKR surgery, these findings might not be extended to the general morbidly obese population. However, based on our results we expect that a weight loss of 16.5% might provide a major decrease in knee pain and increase in function.

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GLUTAMATE IS ELEVATED IN PATHOLOGIC POSTERIOR TIBIAL TENDONS OF PATIENTS WITH POSTERIOR TIBIAL TENDON DYSFUNCTION

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Purpose: Pain is the predominant symptom for many patients with degenerative orthopedic diseases. Oftentimes the pathophysiology of pain in orthopedic disease is not well understood, such as in tendons, which are relatively avascular and aneural. The posterior tibial tendon (PTT) is critical for inversion of the foot and arch stability. When the PTT elongates, through repetitive microtears, it results in a syndrome of significant pain and disability called posterior tibial tendon dysfunction (PTTD). Glutamate is a well-known and potent pain generating excitatory neurotransmitter shown to play a role in Achilles and patellar tendinopathy and as such we expect it to play a role in PTTD. The purpose of this study was to quantify the concentration of glutamate in cultured media from PTT tendon explants of PTTD patients and healthy controls.

Methods: Samples of PTT and flexor digitorum longus (FDL) were collected from twenty-one patients undergoing FDL tendon transfer surgery for stage II PTTD that failed conservative management. The excised portion of the PTT was dissected from the area of maximum disease as determined by gross morphology. Healthy FDL tendon was obtained from trimmings that otherwise would have been discarded. Diseased and healthy tendon samples were trimmed to make them approximately the same size per patient. The samples were washed three times in Dulbecco's modified essential media (DMEM) and then weighed. Samples were then incubated in 3 mL of DMEM with 5 mg penicillin and streptomycin and 12.5 mg HEPES at 37°C with 5% CO₂ for 48 hours to allow for substance diffusion. After 48 hours, the spent media was frozen at -80°C until use. Sample media was spun down through a 10 kDa spin filter (Pall, OD010C34) and glutamate was detected using a colorimetric assay kit (Sigma Aldrich, MAK004). All measurements were normalized by mass and analyzed using a matched-pair t-test.

Results: The samples were obtained from 15 females and 6 males with a mean age of 64 years (range, 53 to 76 years). Glutamate levels from the diseased PTT tendons were significantly elevated compared to the healthy FDL tendons ($p = 0.03$, Table 1).

Conclusions: The etiology of debilitating pain in PTTD is not well understood. We found that glutamate levels are significantly elevated in the diseased portion of the PTT in PTTD when compared to healthy FDL tendon from the same individual. This marked increase in glutamate concentration may contribute to pain through binding with its ionotropic ligand, NMDA, within the tendon or the surrounding tissues. Characterizing the local production of pain generating excitatory neurotransmitters potentially improves our understanding of the pathophysiology of pain and may yield better non-surgical treatment options.

Table 1

Glutamate levels in diseased PTT and healthy FDL tendons

Group (n=21 each)	Glutamate Concentration (nM/g)	95% Confidence Interval
Diseased PTT	12.3 +/- 14.3	5.8-18.9
Healthy FDL Tendon	4.9 +/- 3.7	3.19-6.5

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CHANGES IN ADL AND LOWER LIMB FUNCTION AFTER TOTAL KNEE ARTHROPLASTY

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Purpose: Total knee arthroplasty (TKA) has been established as an effective treatment method that decreases knee pain in osteoarthritis (knee OA). However, it has not been studied sufficiently how much lower limb function and ADL are improved by TKA. The aim of the present study is to establish whether the disorders in ADL are improved similarly to pain by using self-administered rating scale and pain VAS. Lower limb function was assessed by using timed Up & Go test(TUG) and timed open-eyes one-foot standing (TOFS).

Methods: We examined 56 knees-OA patients (men5 women51)(the mean age 74.6 years), 71 knees in which we had performed TKA between July 2011 and September 2012 in our hospital. Patient were assessed preoperatively and postoperatively at 6M using Japanese Knee Osteoarthritis (JKOM), a disease-specific instrument for measuring clinical outcome in patients treated for knee OA. The lower limb function was evaluated using TUG and TOFS. Pain was evaluated using JKOM subscale ;II Pain and stiffness in Knees, score(0-32) and Visual Analog Scale (VAS)(0-100mm). Disorders in ADL was assessed by using JKOM subscale ; III Disorders in usual life, score(0-40).

Results: Regarding pain, VAS and JKOMII were significantly improved by TKA from 70.9(20.0)(SD) to 10.7(13.9),and 18.8(6.4) to 5.4(3.8). Concerning disorders in ADL, JKOMIII was also significantly improved from 19.8(8.1)to9.0(5.6). As to lower limb function, TUG and TOFS were also significantly improved from 17.4(5.7) to 15.0(5.1) and 13.6(16.6) to 21.4(18.9) sec. Postoperative TUG was significantly correlated with postoperative ADL(JKOMIII) in multiple regression analysis(linear type) ($\beta=0.574$ 95%CI:0.255-0.866 $p=0.01$).

Conclusions: Disorders in ADL were improved as well as pain by TKA. TUG is thought to be useful tools which evaluate lower limb function in TKA.

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OA PAIN SHOWS ANTI-PERSISTENT TIME SERIES

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Purpose: The pain associated with osteoarthritis (OA) is the most common symptom for OA patients, serving as a predictor of reduced levels of everyday physical activity. Characterizing the pain of OA is critical to understand mechanisms underlying the disease and to develop approaches to intervene. However, the research on the temporal dynamics of OA pain intensity, especially over longer periods of time, is still rare. In this study, we collected pain ratings from individuals with knee OA 3 times per day over 3 months to explore the temporal properties of the pain.