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AUTOLOGOUS PLATELET RICH PLASMA FOR KNEE OSTEOARTHRITIS

Some have estimated that 10% of men and 13% of women older than 60 years of age suffer from symptomatic knee osteoarthritis (OA). Recently, platelet rich plasma (PRP) injections have been suggested as an effective intervention, although there exists little high-level evidence evaluating the efficacy of this technique. This study was designed to better understand the efficacy of PRP for the treatment of knee OA.

This FDA sanctioned, prospective, randomized, double-blind, parallel group study involved patients with knee OA, randomized to receive either leukocyte-poor PRP autologous conditioned plasma (ACP) or saline for a series of three, weekly injections. The primary efficacy outcome measures were the change in pain, joint stiffness and physical function, as measured using the WOMAC at baseline, weeks one and two, and months two, three, six and 12.

Lower overall WOMAC scores were found in the treatment group as compared to the placebo group starting at two weeks, and remaining statistically significant throughout the duration of the study. In addition WOMAC subgroups for pain, stiffness and physical function were all significantly better in the treatment group than in the placebo group at 12 months.

Conclusion: This prospective study of patients with knee OA found that leukocyte-poor PRP autologous conditioned plasma could provide significant improvement in pain, stiffness and function, starting at two weeks and sustained for 12 months.

Smith, P., et al. Intra-Articular Autologous Conditioned Plasma Injections Provide Safe and Efficacious Treatment for Knee Osteoarthritis. An FDA-Sanctioned, Randomized, Double-Blind, Placebo-Controlled Clinical Trial. **Am J Sports Med.** 2016, April; 44(4): 884 -891.

ARTHROSCOPIC PARTIAL MENISCECTOMY

Arthroscopic surgery for the treatment of degenerative meniscal tears is commonly performed, despite recent evidence questioning its efficacy. Some have suggested that a subgroup of patients with mechanical symptoms such as knee locking may benefit from such procedures. This study was designed to determine whether arthroscopic partial meniscectomy improves mechanical knee symptoms, as compared with a sham procedure.

This study was performed as a secondary, *post hoc* analysis of recently published literature from the randomized, double-blind, sham surgery, controlled trial, the Finnish Degenerative Meniscal Lesion Study (FIDELITY). The study included 146 patients, ages 35 to 65 years, all with refractory knee pain of greater than three months, and with a medial meniscal tear confirmed by MRI. The subjects were randomized to receive either arthroscopic partial meniscectomy (APM) or a sham procedure, with outcome measures including a modified version of the locking domain of the Lysholm score on the day of surgery, and at two, six and 12 months after surgery.

Preoperative mechanical symptoms were reported in 46% of patients in the APM group and 49% in the sham group. At 12 months, 49% in the APM group and 43% in the sham group continued to have mechanical symptoms. Comparative analysis of this subgroup showed that the difference in risk for mechanical symptoms did not differ between the two groups at follow-up.

Conclusion: This randomized, controlled study found no evidence that, among patients with a torn meniscus and mechanical symptoms, meniscal surgery provides more relief than conservative treatment.

Sihvonen, R., et al. Mechanical Symptoms and Arthroscopic Partial Meniscectomy in Patients with Degenerative Meniscal Tear. **Ann Intern Med**. 2016, April 5; 164 (7):449-455.

BODY MASS INDEX IN ADOLESCENCE AND DEATH IN ADULTHOOD

Overweight and obesity in adolescence has increased substantially in recent decades, affecting one third of the adolescent populations in some developed countries. This study assessed the association between body mass index (BMI) in late adolescence and death from coronary heart disease, stroke and sudden death in adulthood.

Before mandatory military service, Israeli adolescents 17 years of age undergo a medical evaluation. Those evaluations which occurred between 1967 and 2010 were used to determine baseline BMI for the study. These individuals were followed for mortality outcomes and documentation of death through June 30, 2011. The primary outcome variable was death attributed to coronary heart disease, stroke, sudden death from an unknown cause or a combination of the three.

During follow-up, 2,918 deaths from cardiovascular causes were documented, with the mean age at the time of death of 47.4 years for coronary heart disease, 46 years for

stroke and 41.3 years for sudden death. The rates of death per person-year were lowest in those with a body mass index of 19.21–21.41 kg/m2. After multi-variable adjustment, the risk of death from cardiovascular causes and all causes began to increase among those whose BMI in adolescence was 21.01-23.62 kg/m2, and was highest among those with a BMI of 28.44-47.54kg/ m2.

Conclusion: This Israeli study found that body mass index of 21.01-23.62 kg/m2, within the accepted normal range, was associated with increased cardiovascular and all- cause mortality during 40 years of follow-up.

Twig, G., et al. Body Mass Index in 2.3 Million Adolescents and Cardiovascular Death in Adulthood. New Engl J Med. 2016: 10.1056/ NEJM OA 1 5 03840

COMBINING PREGABALIN AND DULOXETINE FOR FIBROMYALGIA

Fibromyalgia (FM) is a clinical syndrome with chronic, widespread pain, frequently associated with sleep disturbance, depression, fatigue and cognitive dysfunction. Among the medications commonly used to treat this disorder are the anticonvulsant pregabalin and the antidepressant duloxetine. However, rigorous evidence for combining these medications is lacking. This study was designed to further understand the additional efficacy of combining these medications to treat patients with FM.

Subjects were patients 18 to 70 years of age, diagnosed with FM. The participants were randomized in a double-blind, crossover design to receive maximally tolerated doses of a placebo, pregabalin, duloxetine, or a pregabalin-duloxetine combination for six weeks. The primary outcome variable was the average pain intensity over the past 24 hours, with secondary outcomes including worst pain intensity over the past 24 hours, average nocturnal pain intensity during sleeping hours, global pain relief, the Fibromyalgia Impact Questionnaire, the SF–36 Survey, the Sleep Scale and the Beck Depression Inventory.

Pain in the combination group was lower than that in the placebo group ($p<0.001$) and that among those receiving pregabalin ($p<0.001$). Pain with duloxetine was lower than that in the placebo group ($p<0.001$) and the pregabalin group ($p=0.003$). The combination group had a greater reduction in the percent change in pain, as compared to the pregabalin and placebo groups. The portions of patients reporting at least moderate global pain relief at the maximum tolerated dose were 18.4% of those taking placebo, 38.5% of those taking pregabalin, 41.7% of those taking duloxetine and 67.7% of those taking the combination of medications.

Conclusion: This study of patients with fibromyalgia found that pregabalin/duloxetine combined provides better pain relief than pregabalin or duloxetine alone.

Gilron, I., et al. Combination of Pregabalin with Duloxetine for Fibromyalgia. **Pain.** 2016DOI: 10.1097/j.pain.0000000000000558

DRIED PLUM AND BONE DENSITY

It is estimated that nearly half of women over the age of 50 years will suffer an osteoporosis related fracture. In addition to medications and lifestyle factors, evidence suggests that some foods may improve bone growth and development, thus reducing diseases such as osteoporosis. Among the foods that have been found to have bone protective effects, dried plum has been shown to prevent and reverse bone loss in rat models of osteoporosis. This study was designed to determine the extent to which dried plum assists in the prevention of bone mineral density (BMD) loss and improves biomarkers in post-menopausal women.

This study included 48, osteopenic, postmenopausal women, 65 to 79 years of age, randomly assigned to one of three treatment groups; daily intake of 50 g of dried plum, 100 g of dried plum or a placebo (control group). BMD was evaluated at baseline and at six months using dual energy x-ray absorptiometry. In addition, venous blood samples were obtained for serum bone marker measurements at baseline, and at three and six months.

Both the 50 g and the 100 g per day groups experienced no change from baseline in total BMD, while the control group continued to lose bone ($p<0.05$). There was no significant difference between the two treatment groups. Laboratory tests revealed that a marker of bone resorption, tartrate-resistant acid phosphatase (TRAP-5b) decreased at three months, with that decrease sustained at six months in both treatment groups ($p<0.01$ and $p<0.04$ respectively). In addition, the bone- specific alkaline phosphatase (BAP)/ TRAP-5b ratio was greater in both treatment groups, with no change in the control group. **Conclusion:** This study of elderly, postmenopausal women found that the daily consumption of 50 g of dried plum (approximately five prunes) may be effective in preventing bone loss, with no added benefits noted with higher doses.

Hooshmand, S., et al. The Effect of Two Doses of Dried Plum on Bone Density and Bone Biomarkers in Osteopenic Postmenopausal Women: A Randomized, Controlled Trial. **Osteoporosis Intern.** 16, February: DOI.10.1007/S0019 8–0 1 6–3 52 4–8.

CONCUSSION AND RISK OF LOWER EXTREMITY INJURY

After a single concussion, the probability of a second concussion increases by a factor of three. In addition a history of concussion has been shown to be associated with altered motor control and adoption of conservative gait strategies among clinically asymptomatic athletes. This study assessed the risk of musculoskeletal injuries within 90 days of return to sport post- concussion.

This retrospective study reviewed data for all men and women

participating in National Collegiate Athletic Association Division I football, soccer, hockey, basketball, wrestling, volleyball and softball in the years 2011-2014. Injury records were obtained from the University's Sports Injury Monitoring System (SIMS) database, which identified 106 cases of concussion among 84 athletes. The data were reviewed for cases of musculoskeletal injuries in the 90 days after return to play, with these cases compared to up to three matched controls.

Concussed athletes returned to play at an average of 21 days post- injury. In the 90 days after return to play, the incidence of acute, noncontact, lower extremity, musculoskeletal injury was 17% in concussed athletes, as compared with nine percent in the controls (p=0.04).

Conclusion: This study found that, after returning to play, concussed athletes had a significantly increased risk of lower extremity injury.

Brooks, M., et al. Concussion Increases Odds of Sustaining a Lower Extremity Musculoskeletal Injury after Return to Play among Collegiate Athletes. **Am J Sport Med.** 2016, March; 44(3): 742-747.

DYSPORT TO TREAT LATERAL PATELLOFEMORAL OVERLOAD SYNDROME

Superiolateral fat pad impingement (SLFPI) occurs at the lateral aspect of the patellofemoral joint, resulting in pain in the anteriolateral region of the knee. Iliotibial band syndrome (ITBS) is typified by pain around the lateral knee during activity, thought to result from compression of the fat layer between the IT band and the lateral femoral condyle. This study assess the effect of botulinum toxin type A (Dysport) injections into the tensor fasciae latae (TFL), as an adjunct to treatment for patients with lateral patellofemoral overload syndrome (PFOS), defined as having one or a combination of SLFPI and ITBS.

Subjects included patients presenting to a sports medicine clinic between the ages of 20 and 50 years with a diagnosis of PFOS, who had previously failed conservative treatment. Patients received an ultrasound-guided injection to the IT band of 75 units of Dysport in 0.75 cc of normal saline. Subjects then underwent a six-week course of physical therapy. The primary outcome measure was a change in self-reported knee pain using the Anterior Knee Pain Scale (AKPS) before and at one, 4, 12 and 72 weeks after intervention.

Among the 45 patients, 36 reported improvement in AKPS scores greater than the minimal detectable change (MDC). Significant improvement in AKPS scores were identified from before the injection (61± 15) compared with one (67 ± 15),four (70 ± 16), and 12 weeks (76 ±16) after the injection (p<0 .001), as well as at five years (87.0 ± 12.5) after the injection (p<0.01).

Conclusion: This uncontrolled trial of patients with lateral patellofemoral overload syndrome found that an injection botulinum toxin type A into the IT band combined with exercise could provide long-term pain relief.

Stephen, J., et al. The Use Of Sonographically Guided Botulinum Toxin Type A (Dysport) Injections Into The Tensor Fasciae Latae For The Treatment Of Bilateral Patellofemoral Overload Syndrome. **Am J Sport Med.** 2016, May;44:1196-1202.

FINANCIAL INCENTIVES TO PROMOTE PHYSICAL ACTIVITY IN OVERWEIGHT ADULTS

Higher levels of regular physical activity are associated with a number of health benefits. Evidence suggests that, overall, most workplace physical activity interventions have not been effective. This study tested the effectiveness of three financial incentive designs to promote activity in overweight and obese adults.

This randomized, controlled trial included 281 adult employees of the University of Pennsylvania in Philadelphia, all of whom had a body mass index (BMI) of at least 27 kg/ m². The participants were given the goal of achieving at least 7,000 steps per day, with the steps tracked using the Moves smart phone application. The participants were randomized to one of four groups: a Gain Incentive Group, who received money for each day that they met the goal, a Loss Incentive Group, who had money withdrawn from a monthly incentive allotment each time the goal was not met, and a Lottery Incentive Group, who were eligible to receive money from a lottery, only if the goal had been achieved. A fourth group served as controls. The primary outcome variable was the mean proportion of participant days that the 7,000 step goal was achieved during the 13- week intervention.

Among the four groups, only the Loss Incentive group had a significantly greater mean proportion of participant-days during which they achieved the goal, as compared to the control group (p=0.001). While this group had a greater mean daily steps than the control group, this difference did not achieve statistical significance (p=0.056).

Conclusion: This study found that, among the financial incentives tested, a financial loss model was most effective in achieving physical activity goals among overweight and obese participants.

Patel, M., et al. Framing Financial Incentives to Increase Physical Activity among Overweight and Obese Adults. A Randomized, Controlled Trial. **Ann Intern Med**. 2016, March 15; 164(6): 385-394.

FUSION SURGERY FOR LUMBAR SPINAL STENOSIS

Lumbar spinal stenosis is caused by a narrowing of the spinal canal, with symptoms often including low back and leg pain. These are usually associated with walking. In recent years, half of the patients in the United States who received surgical treatment for lumbar spinal stenosis have undergone fusion surgery as well. This study investigated whether fusion surgery, as an adjunct to decompressive surgery, can produce better clinical outcomes.

This multicenter, open label, clinical superiority trial included patients with lumbar spinal stenosis, with or without degenerative spondylolisthesis. The subjects were randomized to undergo either decompressive surgery plus fusion, or decompressive surgery alone. The primary outcome measure was the Oswestry disability index (ODI), with secondary outcome variables including scores on the European Quality Of Life-five dimensions (EQ- 5D), visual analogue scales for back pain and leg pain, the ZCQ measure of disability, and the six-minute walk test.

Between October of 2006 and June of 2012, 228 patients were enrolled. At two years, there was no significant

difference in the primary outcome, the ODI (p=0.27). In addition, there was no significant difference between groups in performance of the six-minute walk test at two years, with walking distance improving in both groups (p=0.60). Subjective assessments of improvement in walking ability did not differ between groups. Of those followed for five years, there were no significant differences on any of the patient reported outcome measures. The mean direct cost of the procedure was $6,800 higher in the fusion group.

Conclusion: This study of patients with lumbar spinal stenosis found that decompression with fusion did not result in clinical outcomes that were superior to those of patients who underwent decompression surgery without fusion.

Forsth, P., et al. A Randomized, Controlled Trial of Fusion Surgery for Lumbar Spinal Stenosis. **N Eng J Med.** 2016, April, 14; 374(15): 1413 -1423.

ETORICOXIB VERSUS DICLOFENAC FOR HETEROTOPIC OSSIFICATION PREVENTION

Heterotopic ossification (HO) is thought to occur in 30 to 40% of patients undergoing primary total hip arthroplasty (THA). Prophylaxis often includes nonsteroidal anti-inflammatory and/or low-dose irradiation. As COX-II blockers have a lower rate of GI-complications than do non-selective NSAIDs, this study compared the efficacy of etoricoxib (ETO) and diclofenac (DIC) for the prevention of HO.

This prospective, double-blind, randomized trial included 100 patients scheduled for THA, with 50 randomized to receive etoricoxib, 90 mg/day, and 50 to receive diclofenac, 75mg/day for nine days post-surgery. During this time, only opioids and acetaminophen were permitted for pain control. The patients were evaluated at six months post-surgery, with radiographs of the pelvis obtained to evaluate for HO.

Eighty-nine patients were examined at six months, with HO found in 38.6% in the DIC group and 37.8% in the ETO group (p=0.871). While only Brooker grades 1 and 2 HO were found, there was a significant negative correlation between ossification and hip abduction and internal rotation. Two patients of each group complained of nausea, and one patient of the ETO group experienced elevated blood pressure.

Conclusion: This study of patients undergoing total hip arthroplasty found that heterotopic ossification prophylaxis with etoricoxib a Cox II blocker and diclofenac were equally effective.

Winkler, S., et al. Comparative Clinical Study of the Prophylaxis of Heterotopic Ossifications after Total Hip Arthroplasty Using Etoricoxib or Diclofenac. **Intern Ortho**. 2016, April; 40(4): 673-680.

ORAL CONTRACEPTIVES AND ANTERIOR CRUCIATE LIGAMENT INJURY

In a number of sports, women have higher injury rates of the anterior cruciate ligament (ACL) than do men. Some have postulated that estrogen may predispose women to ACL injuries. As progestins, the active compounds in oral contraceptives (OCs), disrupt the normal menstrual cycle, suppressing estrogen levels, this study assessed whether the use of oral contraceptives may be protective against ACL injury.

This case controlled study mined information from an insurance database collected from 2002 through 2012 concerning women ages 15 to 39 years. Subjects who underwent ACL reconstruction were compared to three matched controls. Cases had at least 90 days of OC use, with ACL injuries compared between those who did and those who did not use oral contraceptives.

Of the 26.7 million women enrolled in the database, 12,819 underwent ACL reconstruction. The age group 15 to 18 years had the highest incidence of ACL reconstruction. Of those who underwent ACL reconstruction 23.39% were users of OCs, compared with 22.82% among controls (p<0.0001). Importantly however, those with ACL injury had significantly higher percentages of enrollees labeled as high risk, receiving steroid injections, prescribed inhaled or oral steroids or antibiotics and diagnosed with asthma. Overall the adjusted odds ratio did not differ significantly between groups. However, in the 15 to 19 year age range, subjects undergoing ACL repair were 18% less likely to use oral contraceptives than were matched controls (p<0.0001).

Conclusion: This population based study found that women 15 to 19 years of age who used oral contraceptives underwent 18% fewer ACL reconstructions than did matched non-users.

Gray, A., et al. Effects of Oral Contraceptive Use on Anterior Cruciate Ligament Injury Epidemiology. **Med Sci Sports Exer.** 2016, April; 48(4): 648-654.

GAIT TRAINING AT SKILLED NURSING FACILITIES AFTER TOTAL JOINT ARTHROPLASTY

With an aging population, the demand for joint arthroplasties has resulted in a surge in the number of joint replacements performed annually. Numerous studies have suggested the need for early, rapid and continuous mobilization with weight bearing after surgery to ensure an optimal outcome. This study examined the ambulatory proficiency of patients discharged to a skilled nursing facility (SNF).

This retrospective study included patients undergoing total joint arthroplasty between November of 2012 and July of 2014. Records were reviewed of those discharged to a SNF, with extracted data including daily visual analog scale pain scores, distances ambulated, weight bearing status at discharge and total length of hospital stay.

Data concerning 68 patients from 31 sites were included in the final analysis. The average length of acute hospitalization for these patients was 2.9 days and that for SNF stay was 17.5 days. Of the patients studied, 29.4% began gait training on the day of acute hospital discharge, with 63.2% beginning on day one and 7.4% on day two. During the first four days of SNF admission, 35% of the patients had a single physical therapy session, 23.5% had two sessions, 38.2% had

three sessions and 2.9% had four sessions. Those who walked on the day of admission (day zero) or the day after admission (day one) experienced a significant decline in distance ambulated (73% and 50% respectively) compared to the last acute hospital physical therapy session ($p<0.001$ for both comparisons).

Conclusion: This study of patients with total joint arthroplasties discharged to skilled nursing facilities found a significant decline in ambulation distance on the day of admission and the day after, relative to the last day of acute hospitalization.

Haghverdian, B., et al. Gait Training in Patients discharged to a Skilled Nursing Facility following Total Joint Arthroplasty. **Geriatric Ortho Surg Rehab**. 2016, March; 7(1): 33-38.

ONE-YEAR FOLLOW-UP OF RADIAL NERVE PALSY

Humeral shaft fractures are often associated with radial nerve palsy, representing the most common traumatic nerve injury. This study assessed the recovery time and clinical outcome of patients with primary or secondary radial nerve palsy after humoral shaft fracture.

This retrospective analysis of prospectively collected data included all patients treated at a level I Trauma Center with a humeral fracture with concurrent radial nerve palsy. Data were reviewed to determine primary versus secondary injuries, with patients followed for one year for clinical outcome. Nerve conduction studies were routinely performed two weeks following the onset of radial nerve palsy, and again after four months in cases of delayed recovery. Functional assessment was performed at all follow-up visits.

Of the patients, 53 sustained a high-energy trauma and 49 a low energy trauma, leading to humeral shaft fractures. Among those with a primary radial nerve injury (group A), 35 were treated with open reduction internal fixation, with 41 undergoing a similar procedure among those with a secondary nerve injury (group B). The time to onset of recovery of the radial nerve palsy was 10.5 weeks. In 45 patients (81.8%), full motor recovery (M5) was achieved after 26.7 weeks. In six patients, full recovery (M4) was achieved within 52 weeks. At final follow-up, 82% could manage activities of daily living without difficulty, while 10.7% showed mild to moderate impairment of motor function, and 6.8% suffered from severe functional impairment.

Conclusion: This study of patients with humeral fractures resulting in radial nerve injuries found that full recovery occurred in 81.8% at an average of 26.7 weeks. Mild to severe impairment was noted in over 17% at final follow-up.

Lang, N., et al. Retrospective Case Series with One-Year Follow-Up after Radial Nerve Palsy Associated with Humeral Fractures. **International Ortho.** DOI: 10. 1007/ s 00264-016-3186-3

LAMINECTOMY WITH OR WITHOUT FUSION FOR SPONDYLOLISTHESIS

Spinal fusions are increasingly common in the United States, representing the highest aggregate hospital cost of any surgical procedure. This study compared the effectiveness of laminectomy alone versus a combination of laminectomy and lumbar spinal fusion.

This randomized, controlled trial included patients with stable degenerative spondylolisthesis. The participants were randomly assigned to undergo either decompressive laminectomy or laminectomy with posterolateral fusion, at the single level of the spondylolisthesis. The primary outcome measure was the change in the SF-36 physical component summary score at two years. The secondary outcome measure was the change in the disease specific Oswestry disability index (ODI) score.

Subjects were 66 patients with a mean age of 67 years. At two years post-surgery, the fusion group had a significantly greater increase in the SF-36 physical-component summary score than did those in the decompression alone group (15.2 points versus 9.5 points). The magnitude of the difference in treatment effect was sustained over four years after surgery (p=0.02). The fusion group had a lower rate of reoperation over four years than did the decompression group (p=0.05). Disability related low back pain scores, as measured by the ODI, did not differ significantly at years two, three and four.

Conclusion: This study of patients undergoing lumbar laminectomy found that the addition of posterolateral fusion was associated with a slightly greater clinically meaningful improvement in physical health-related quality of life, as measured at two, three and four years post-surgery.

Ghogawala, Z., et al. Laminectomy plus Fusion versus Laminectomy Alone for Lumbar Spondylolisthesis. **N Eng J Med.** 2016, April 14; 374:1424-1434.

PHYSICAL ACTIVITY AND SYMPTOMS AFTER CONCUSSION

While some have argued that, acutely after a concussion, unrestricted physical activity may be detrimental to recovery, few studies have prospectively assessed the effect of behavior on patient outcome .This study was designed to better understand the association between physical activity and symptom recovery after an acute episode of concussion

This prospective study included all patients diagnosed with a concussion seen in a sports medicine clinic between October of 2009 and July of 2011. Patients were assessed by physical examinations, with symptoms determined using the Post-Concussion Symptom Scale (PCSS), a 22-symptom inventory. During the initial clinic visit, patients were asked whether they had continued their regular exercise from the time of injury. At follow-up, the participants described their average levels of physical and cognitive activity since the previous clinic visit.

A total of 364 patients were included in this study. The mean time to presentation after the injury was11.8 days. Of those reporting a resolution of symptoms, the mean symptom duration was 48.9 days. While the initial PCSS scores and female gender were independently associated with symptom duration,

physical activity after injury was not. For those ages 13 to 18 years, higher levels of physical activity after injury were associated with a shorter duration of symptoms.

Conclusion: This prospective study found that physical activity after a concussion is not associated with symptom duration.

Howell, D., et al. Physical Activity Level and Symptom Duration Are Not Associated after Concussion. **Am J Sports Med.** 2016, April; 44 (4): 1040-1046.

METABOLIC SYNDROME AND MILD COGNITIVE IMPAIRMENT

The Metabolic syndrome (MetS) is a cluster of cardiovascular risk factors that are known to be associated with an increased risk of cardiovascular disease and stroke. This study reviewed the association between the MetS and mild cognitive impairment (MCI) and its progression to dementia.

This population based study included subjects 55 years of age or older living in one of five districts in southeast Singapore. Baseline assessments were conducted from 2003 to 2004, with follow-ups

conducted in 2005 to 2007 and 2007 to 2009. Subjects had no MCI or dementia at baseline. All subjects underwent detailed, structured interviews, clinical evaluations, blood sampling,neuropsychological evaluation and performance-based tests. Covariates included age, gender, education, APOE-ε4 genotype, smoking history and levels of physical, social and other productive activities. At three-year follow-up, among the 1519 subjects, there were significantly more cases of incident MCI among those with MetS (13.5%) than among those without [8.1% ($p<0.001$)]. A significant increased risk of MCI was associated with MetS, as well as diabetes mellitus, central obesity, dyslipidemia, and three or more component cardiovascular risk factors (but not hypertension).

Conclusion: This study of cognitively normal persons 55 years of age or older found that the metabolic syndrome, diabetes mellitus, central obesity, dyslipidemia and the presence of three or more cardiovascular risk factors are associated with a higher risk of developing mild cognitive impairment and dementia.

NG, T., et al. Metabolic Syndrome and the Risk of Mild Cognitive Impairment and Progression to Dementia. Follow-Up of the Singapore Longitudinal Ageing Cohort. **JAMA Neurol.** 2016, April; 73(4): 456-463.

KNEE REPLACEMENT REVISION AND BODY MASS INDEX

Obesity has been recognized as a main risk factor for osteoarthritis (OA), with some literature suggesting that obese patients may have poorer outcomes. This study was designed to identify a body mass index (BMI) cutoff value above which the revision rate after total knee arthroplasty (TKA) increases.

This prospective study involved all patients undergoing TKA at one institution beginning in 1998. Information concerning baseline characteristics and surgical intervention was documented, as was information concerning comorbidities and major complications. The BMI at the time of surgery was recorded and classified into one of five categories according to the World Health Organization's classification system. The primary outcome variable was all-cause revision after TKA.

Data were included from 2,442 primary TKAs in 2,035 patients. The mean age was 72 years, with a mean follow-up duration of 93 months. Revision rates did not differ between those who were normal weight (3.2 cases per 1,000 person-years), overweight (3.4 cases per 1,000 person-years), or obese class I (3.0 cases per 1,000 person-years), but increased to 6.7 cases per 1,000 person-years in obese class II and 5.7 cases per 1,000 person-years among those in obese class III. The adjusted hazard ratio of those with a BMI of 35kg/m2 or greater was 2.1, as compared to those with a lesser BMI ($p=0.0008$).

Conclusion: This study of patients undergoing total knee arthroplasty found that, while revision rates more than doubled among those with a BMI of 35 kg/m2or greater, those below this cutoff had similar risk of replacement.

Zingg, M., et al. Influence of Body Mass Index on Revision Rates after Primary Total Knee Arthroplasty. Intern Ortho. 2016, April; 40(4): 723-729.

ORAL PREDNISOLONE FOR THE TREATMENT OF GOUT

Acute gout flares are often treated with nonsteroidal anti-inflammatory the efficacy and safety of oral prednisolone, as compared with indomethacin, in patients presenting to the emergency department with acute gouty attacks.

This multicenter, double-blind, randomized, double dummy, controlled trial included 416 patients presenting to the emergency department with a clinical diagnosis of acute gout flare. Subjects were randomized to receive either prednisolone, 30 mg a day for five days, plus a placebo, or a placebo plus Indocin at 50 mg, three times a day for two days, followed by 25 mg three times a day for three days. The primary outcome measure was pain at rest and with activity, using a visual analogue scale, measured two hours after entering the emergency department, and then daily for 14 days.

Improvement in pain during the emergency department phase, and during the 14-day follow-up, was similar between the two groups. No major adverse events occurred during the study. A significantly greater number of patients in the indomethacin group had minor adverse events during the emergency department phase, as compared with the prednisolone group. During the 14-day follow-up, the rate of minor adverse events, approximately 37%, was comparable in both groups.

Conclusion: This study of patients with acute gouty attacks revealed that oral prednisolone and indomethacin have similar efficacy for the treatment of pain, as measured both acutely and at 14-day follow-up.

Rainer, T., et al. Oral Prednisolone in the Treatment of Acute Gout: A Pragmatic, Multicentered, Double-Blind, Randomized Trial: **Ann Intern Med.** 2016, April 5; 164(7): 464-471.

REPEATED BOTULINUM TOXIN INJECTIONS FOR NEUROPATHIC PAIN

Botulinum toxin type A has been used to inhibit synaptic exocytosis, reducing muscle tone. Several studies have demonstrated that this toxin may have analgesic activity, independent of its effect on muscle tone. This study assessed the efficacy of botulinum toxin A for the treatment of peripheral neuropathic pain.

This randomized, double-blind, placebo controlled, parallel group, clinical trial included patients with neuropathic pain scores of at least four out of 10, with daily pain for at least six months, attributable to a peripheral nerve lesion. One week after baseline assessment, patients were randomized to receive two, subcutaneous administrations of botulinum toxin A up to 300 units or an equal volume of placebo, 12 weeks apart. The primary outcome variable was the change in self-reported pain intensity after two successive injections, over the prior 24 hours, using the 11-point Brief Pain Inventory (BPI). All secondary endpoints were assessed at four, 12 and 24 weeks, including safety and tolerability and therapeutic gain.

Of the 66 adults included in the intent to treat analysis, the mean pain intensity was 6.5 at baseline and 4.6 at week 24 in the botulinum toxin group, and 6.4 at baseline and 5.8 at week 24 in the placebo group ($p<0.0001$). The difference in reduction in pain intensity between the groups was significant after the first administration, starting from week one, and increased between weeks 15 and 24. The proportion of those who responded with at least a 30% reduction in pain at week 24 was greater in the treatment group ($p=0.001$). This was not true of the proportion who responded with at least a 50% reduction in pain ($p=0.2$).

Conclusion: This study found that two administrations of botulinum toxin A resulted in a sustained analgesic effect against peripheral neuropathic pain.

Attal, N., et al. Safety and Efficacy of Repeated Injections of Botulinum Toxin A in Peripheral Neuropathic Pain (BOTNEP): A Randomized, Double-Blind, Placebo-Controlled Trial. **Lancet Neurol.** 2016, May; (15): 555-565.

RUNNING INJURIES WITH BARE VERSUS SHOD FEET

Advocates of barefoot running (BR) suggest that this form is more natural, and may reduce injury and promote foot strength. Opponents believe that the lack of cushion and support may lead to an increased risk of injury. This study reviewed the incidence and rate of injuries, comparing BR with Shod Running (SR).

Runners were solicited from online runners favoring running either BR or SR. Each participant provided information regarding running history, mileage history, injury history and monthly mileage. Injury data were recorded over one year, with an emphasis on injury location, diagnosis, medical attention received, footwear worn and activity during injury. The relative number of runners injured and the number of injuries reported between the two groups were analyzed.

A total of 226 runners were recruited, including 108 in the SR group and 118 in the BR group. Of all the musculoskeletal injuries, the foot was the most commonly injured body part in both groups. No significant differences were seen between the two groups in the relative number of runners reporting a musculoskeletal injury. When normalized for mileage, there was no difference in injury rates between the groups. The SR group comprised 21 diagnosed injuries to the hip and knee, as compared to only five in the BR group. This trend was reversed among lower leg injuries, with the BR group sustaining 27 lower leg injuries, as compared to 12 in the SR group.

Conclusion: This prospective study suggests that the rate of injury is similar between those who run barefoot and those who run wearing shoes, though the location of injury may differ.

Altman, A., et al. Prospective Comparison of Running Injuries between Shod and Barefoot Runners. **Br J Sports Med.** 2016, April; 50(8): 476-480.

PSYCHIATRIC ILLNESS IN PATIENTS WITH ORTHOPEDIC POLYTRAUMA

Recent data have shown that patients with depression have worse outcomes after stroke, as well as after a number of surgical procedures. Recent orthopedic literature is deficient with regard to outcomes relevant to individuals with psychiatric illness. This study investigated the prevalence, management patterns and surgical outcomes of patients with psychiatric illnesses who sustain polytrauma.

Data of patients with trauma from a level-I trauma center were reviewed. All presented with femoral or axial skeletal fractures between October of 2010 and February of 2013. Records were reviewed to identify psychiatric disorders that were either already part of the record or were entered as part of the trauma intake. Complications in the postoperative period were then determined and compared between those with and those without a psychiatric diagnosis.illness, including 37.9% with a diagnosis of depression. Independent predictors of postoperative complications included male gender (OR 2.78), those with higher injury severity scores (OR 1.079) and patients with depression (OR 2.96).Of note, patients treated on the orthopaedic trauma service were less likely to have their home psychiatric medications restarted, as compared to those on the general trauma service.

Conclusion: This study of patients with orthopedic polytrauma found that psychiatric illness is common in these patients, and that those with depression have a higher likelihood of postoperative complications.

Weinberg, D., et al. Psychiatric Illness is Common among Patients with Orthopaedic Polytrauma and Is Linked with Poor Outcomes. **J Bone Joint Surg.** 2016, March 2; 98-A:341-348.

SINGLE INTRA-ARTICULAR INJECTION OF HYALURONIC ACID FOR HIP OSTEOARTHRITIS

Hip pain is reported by 19.2% of people 65 years of age or older. The optimal treatment requires a

combination of nonpharmacologic and pharmacologic modalities. Intra-articular hyaluronic acid (HA) injections are widely used and are recommended in existing guidelines for patients with knee osteoarthritis (OA), with less evidence available concerning arthritis of the hip. This study evaluated the efficacy and safety of intra-articular injections of a single dose of high molecular weight HA for patients with hip OA.

Subjects were 207 patients with hip OA, with an average age of 67 years. The patients received a single injection of 2.5% high molecular weight (2800 kDa) HA, with the injections performed under fluoroscopic guidance. All participants were evaluated before injections and at three, six and 12 months, using the modified brief pain inventory (BPI), the Harris Hip Score (HHS) and a visual analog scale (VAS) of pain.

Pain, as measured by the BPI severity score, improved significantly between baseline and the three follow-up visits ($p<0.001$). Changes in pain between baseline and the first follow- up were significant for worst pain ($p=0.037$) and mean pain ($p=0.043$). Changes in worst pain remained stable from three to 12 months, although changes in average pain, slightest pain and pain during the visit were significantly improved at all intervals. Scores on the HHS and VAS improved from baseline to three months ($p<0.001$ and $p<0.001$), remaining stable thereafter.

Conclusion: This uncontrolled study of patients with hip osteoarthritis suggests that a single dose of high molecular weight hyaluronic acid can improve pain by three months, with results continuing for one year.

Rivera, F., et al. Single Intra-Articular Injection of High Molecular Weight Hyaluronic Acid for Hip Osteoarthritis. **J Orthopaed Traumatol.** 2016, Mar; 17(1):21-26.

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