

Results: The five models using T1 and T2 radiomics features + clinical features achieved mean area under the ROC curves (AUC) of 0.729 to 0.780 and accuracy of 0.696 to 0.757. The highest AUC achieved was 0.780 using a support vector machine model. All combined radiomics + clinical feature models outperformed the classification models using clinical features alone.

Conclusion: Classification models using T1 and T2 radiomics features + clinical features perform better in differentiating benign and malignant myxoid soft tissue tumors than models using clinical features alone. Future studies include validation of these preliminary findings in a larger and separate data set, and comparison of the diagnostic performance of radiomics to manual review of images by clinicians.

Computer Assisted Navigation Surgery Obviates the Need of Extensive Soft Tissue Release During Total Knee Arthroplasty for Varus Knees

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Introduction: We aim to (a) evaluate the kinematic patterns of varus deformities in patients with osteoarthritic knees (b) compare our result with literature published in the past and identify a valid classification scheme for the kinematic patterns of varus deformity, and (c) validate the concept of need-based soft tissue release in TKA.

Methods: The computer navigations data for all those patients who underwent TKA for varus deformity was extracted and was used to assess the change in coronal plane alignment throughout the range of motion. Clinically, patient satisfaction levels were assessed by using Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) score and functional outcomes were assessed using the Knee Society Score (KSS).

Results: 120 patients satisfied the inclusion criteria set for the study. The mean age of the patients was 62.5 ± 7.09 years. The mean preoperative varus deformity was $9.5^\circ \pm 4.99^\circ$, which was correctable to a mean of $2.88^\circ \pm 2.48^\circ$ in full extension. It was found that 74 (61.7%) patients had correctable varus while 46 (38.3%) had non-correctable varus. Based on the deformity pattern, the soft tissue release required was different in each group of patients. There was a statistically significant improvement both the clinical parameters ($p < 0.001$).

Conclusion: Computer Assisted Navigation System helps to identify the dynamic nature of knee deformity before bone resections and soft tissue release. The soft tissue release for balancing the knee in varus osteoarthritic knees can be tailored sequentially according to need-base for a given pattern of deformity.

Expected Trends of Shoulder Arthroplasty Infection and Its Economic Burden in the United States

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Introduction: Periprosthetic joint infections (PJI) are a major cause of morbidity after shoulder arthroplasty. However, there is a paucity of the case trends and national economic impact they pose. In this study, we aimed to investigate the economic stress that shoulder PJIs place on the American healthcare system and the toll they will incur over the coming decade.

Methods: The Nationwide Inpatient Sample (NIS) database was used to study trends in shoulder PJI cases and total hospital charges for anatomic total shoulder arthroplasty, reverse shoulder arthroplasty, and hemiarthroplasty from 2011 to 2018. A linear regression analysis was used to predict cases and total hospital charges through the year 2030. US dollar values were adjusted to 2021 relative purchasing power parity.

Results: From 2011 to 2018, shoulder PJI procedure volumes increased by 226%. The rise PJI cases was demonstrated to outpace non-infected arthroplasties, rising from 0.8% in 2011 to 1.4% infection rate in 2018. The rise in cases translated to an increase in total charges, from \$44.8 million in 2011 to \$190.3 million in 2018. Linear regression modelling projects cases to rise by an additional 176% and annual charges to more than double to \$459.6 million by 2030.

Conclusion: This study demonstrates the large economic burden that shoulder PJIs pose on the American healthcare system, which is predicted to reach nearly half of a billion dollars in annual charges by 2030. Understanding trends in procedure volume and hospital charges will be critical in evaluating strategies to reduce shoulder PJIs.

How Does Anterior Cruciate Ligament Incompetence Influence the Varus Osteoarthritic Knee?

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Introduction: The aims of our study were: (i) to assess the correlation of anterior cruciate ligament (ACL) deficiency with severity of preoperative varus deformity in osteoarthritic knees, (ii) to compare posterior medial femoral condyle (MFC) changes in ACL deficient vs ACL competent knees, and (iii) to compare the mean femoral external rotation of ACL deficient vs ACL competent knees.

Methods: 250 consecutive ACL deficient and ACL competent patients each, undergoing total knee arthroplasty (TKA) for osteoarthritis with a varus deformity were reviewed retrospectively. Data

from a prospectively collected computer navigation assisted TKA database was analyzed for an association between ACL insufficiency and: severity of the varus deformity, incidence of posterior MFC compensatory changes, and the magnitude of femoral component external rotation.

Results: A statistically significant positive correlation was found between ACL incompetence and- (1) Severity of the knee varus deformity ($p < 0.001$), (2) Incidence of compensatory posterior MFC hypertrophy ($p < 0.001$) and (3) Femoral component external rotation required to balance the knee in flexion during TKA ($p < 0.001$).

Conclusion: ACL deficiency is associated with an increase in the severity of the varus deformity. A significantly higher incidence of posterior MFC hypertrophy and increased values of the combined Whiteside-PCA angle are noted in ACL deficient knees compared with knees with an intact ACL. Multiple intraoperative landmarks must be assessed for setting femoral component rotation while performing TKA in the ACL deficient knee.

Opioid Understanding Is Linked to Health Literacy in Orthopaedic Trauma

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Introduction: No current standard exists for assessing patients' understanding about prescription opioid medication to curb related risks. This study evaluates the validity of a novel opioid literacy tool (OLT) to identify at-risk orthopaedic trauma patients in need of targeted education.

Methods: In this on-going randomized controlled trial (NCT04154384) participants admitted to a level-1-trauma-center for an isolated orthopaedic injury completed the OLT, a 7-item self-administered survey, evaluating *Knowledge* (scored 0-10), *Self-awareness* (scored yes/no), and *Attitude* towards opioids and related risks (scored 0-10). Participants also completed the validated Opioid Risk Tool (ORT) and health literacy tool (SAHL-E) and were taking opioids during hospitalization. Demographics were collected from health records. Correlation coefficients (r) and multivariable regression analyses were performed to assess concurrent validity of the OLT with the SAHL-E.

Results: Among 136 participants (66.2%=black, 50.7%=male, age=42.7±15.2 years) 38.2% were at high risk for opioid misuse (ORT≥3) and 26.5% had poor health literacy (SAHL-E≤14). All OLT-subcategories showed significant positive associations with SAHL-E scores (*Knowledge*: $r=0.36$, $p < 0.001$; *Self-awareness*: odds ratio=2.66, 95% confidence interval=1.14-6.23; *Attitude*: $r=0.35$, $p = 0.024$), demonstrating concurrent poor health literacy with poor opioid understanding. OLT scores were not associated with ORT scores, however, 35.6% of participants without opioid knowledge were at high risk for opioid misuse (ORT≥3).

Conclusion: Findings confirm concurrent validity of our OLT with the SAHL-E in the orthopaedic trauma setting. This data demon-

strates that poor opioid literacy is not associated with traditional opioid risk assessments (i.e., ORT) and ought to be considered as a separate, compounding entity in opioid-related risk stratification.

The Use of Radiosynovectomy Using Yttrium-90 as an Adjunct to Mechanical Synovectomy for Pigmented Villonodular Synovitis

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Introduction: Pigmented Villonodular Synovitis (PVNS) or Giant Cell Tumour of the Tendon sheath (GCTT) is a rare disorder involving proliferation of the synovium in any joint, however the knee, hip and ankle joints are most commonly targeted. Pigmented Villonodular Synovitis (PVNS) or Giant Cell Tumour of the Tendon sheath (GCTT) is a rare disorder involving proliferation of the synovium in any joint, however the knee, hip and ankle joints are most commonly targeted. The aim of this study is to assess the outcome of patients with PVNS of the knee managed by intra-articular injection of Yttrium-90, after arthroscopic/open debulking synovectomy.

Methods: A cohort of eight knees from six patients, three knees in the combined arthroscopic synovectomy and radiosynovectomy group, and five knees in the radiosynovectomy treatment alone group. Patients from both groups were asked to complete KOOS questionnaires. Their answers were collated and scores calculated using the designated specific equation.

Results: Our results demonstrate that although patients in the combined arthroscopic synovectomy and radio-synovectomy arm possess on average higher pain scores and symptoms than those who underwent radiosynovectomy alone, the combined therapy had higher scores in ADLs, Sport-Rec, QoL, and overall KOOS scores.

Conclusion: Neo-adjuvant arthroscopic mechanical debridement is a safe and quick procedure with minimal side effects, with improved overall KOOS scores.

Two Teams Simultaneous Bilateral Total Hip Arthroplasty via Direct Anterior Approach in an Ordinary Table -A Comparative Study with Matched Pair of Consecutive Bilateral Total Hip Arthroplasty

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Introduction: The Direct Anterior Approach (DAA) has regained its popularity in total hip arthroplasty (THA). We conducted a pilot study to compare the outcome of two team simultaneous bilateral THA by DAA with a control cohort of patients who underwent single stage bilateral THA by DAA in consecutive fashion.