English Lectures & Papers 7 "Sport-related elbow injury"

Feb. 4th (Sat) 11:15～12:15
Room 1 (Yamagin Kenmin Hall 2F Main Hall)

English Lectures 7 (L7-1)

Elbow Injury in Adult Throwers: Pathology and Management

Hiroyuki Sugaya
Tokyo Sports & Orthopaedic Clinic, Japan

Elbow injury is frequently seen in baseball players regardless of age. In low teens and adolescents with open physis, bone and cartilage problems are the main pathology. On the other hand, in adult and high teens with closed physis, soft tissue problem in addition to bony deformity is becoming the main source of injuries. It is widely believed that overuse is the main cause of these injuries, however, excessive valgus stress overload due to poor throwing mechanics is more important factor for those who have disabled elbow. According to a recent Ultrasound study, more medial elbow laxity in dominant arm is observed even in pre-adolescent baseball players than non-dominant arm. Therefore, mild to moderate medial laxity in baseball thrower's dominant arm may not be pathological, but natural history or adaptable change for baseball throwing. Therefore, the first step of treatment for disabled elbows in baseball throwers is to reduce valgus stress overload by correcting throwing mechanics through addressing physical functional deficit such as scapula, rotator cuff, and trunk and lower extremities.

Pathology of adult elbow injury includes UCL injury, posteromedial impingement due to olecranon spur or loose fragments, and development of arthritis. Regarding UCL injury, although conservative treatment such as physio, PRP and shock wave therapy are useful for some specific cases, surgical intervention seems to be the main stream especially in United States. On the other hand, development of arthritis in adult throwers dominant arm is another issue to consider. There seems to exist strong relationship between medial elbow laxity and aggravation of arthritis, which causes from posteromedial impingement to moderate to severe motion loss. In this talk, I will describe natural history of thrower's elbow, and treatment strategy and management for disabled elbow in adult baseball players.

【Curriculum Vitae】

Hiroyuki Sugaya, MD, established Tokyo Sports & Orthopaedic Clinic (TSOC) in 2020. He has been continuously dedicating himself to treatment of patients who have shoulder and elbow disorders operating 600 to 700 cases per year. He also serves as a visiting Professor of Tokyo Women's Medical University and University of Hawaii. He was the congress president of the 44th Japan Shoulder Society (JSS) Annual Meeting in 2017, and has selected as a two-year term (October 2022 to September 2024) society president of JSS. In addition, he is a corresponding member of the American Shoulder & Elbow Surgeons. His clinical interests relate to treatment for shoulder and elbow disorders in various ages of patients including Olympic level athletes and professionals. He has been an invited guest lecturer at numerous overseas shoulder courses and meetings and published around 100 English and 400 Japanese articles in these fields. In addition, he has been dedicated himself to education for young surgeons worldwide accepting many visitors and fellows from all over the world.

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English Lectures 7 (L7-2)

Ulnar Collateral Ligament Tears: Where Do We Stand in 2023?

Brandon J. Erickson
Rothman Orthopaedic Institute, USA

Ulnar collateral ligament injuries continue to plague baseball players of all levels, in all areas of the world. Many risk factors for UCL injuries have been reported including pitch velocity, lack of shoulder and hip range of motion, workload and others. Unfortunately, despite our best efforts at injury prevention, UCL injuries continue to rise. Treatment for many UCL injuries often involves a period of rest and rehabilitation followed by a return to throwing program. In athletes who fail conservative management, or who sustain a full thickness tear, operative fixation is offered. While UCL reconstruction has been the gold standard for surgival treatment of UCL tears, UCL repair has become a very reliable treatment option that allows a high rate of return to sport in much faster time frame than UCL reconstruction. Once players are allowed to return to sport, there does not appear to be a need to limit the number of pitches thrown or innings pitched. We will discuss all aspects of UCL injuries including newly defined risk factors and ground breaking surgical treatments.

【Curriculum Vitae】

EDUCATION

2020-present	AMERICAN BOARD OR ORTHOPAEDIC SURGERY Board Certified in Orthopaedic Surgery
2018-present	JEFFERSON UNIVERSITY SCHOOL OF MEDICINE Assistant Professor
2021-present	GROSSMAN SCHOOL OF MEDICINE AT NYU Assistant Professor
2018-present New York, NY	ROTHMAN ORTHOPAEDIC INSTITUTE Sports Medicine and Shoulder Surgeon Section Chief, Shoulder & Elbow Surgery: Phelps Hospital
2017-2018 New York, NY	HOSPITAL FOR SPECIAL SURGERY Orthopaedic Sports Medicine Fellowship
2012-2017 Chicago, IL	RUSH UNIVERSITY MEDICAL CENTER Orthopaedic Surgery Residency
2008-2012 Boston, MA	TUFTS UNIVERSITY SCHOOL OF MEDICINE Doctor of Medicine
2004-2008 Notre Dame, IN	UNIVERSITY OF NOTRE DAME Bachelor Science-Business

PROFESSIONAL SOCIETIES

2019-present	Associate Member: American Shoulder and Elbow Surgeons
2019-present	Member: New York Cartilage Repair Society
2018-present	Member: European Society for Surgery of the Shoulder and the Elbow
2018-present	Candidate Member: American Academy of Orthopaedic Surgeons
2016-present	Member: American Orthopaedic Society for Sport Medicine
2011-present	University of Notre Dame Orthopaedic Society
2011-present	Alpha Omega Alpha Society
2007-present	University of Notre Dame Monogram Club: Varsity Football
2016-2017	Resident Member: Orthopaedic Research Society
2014-2017	Resident Member: Mid-America Orthopaedic Association
2013-2017	Resident Member: Arthroscopy Association of North America
2012-2018	Resident Member: American Academy of Orthopaedic Surgeons
2008-2012	American Medical Association

ACADEMIC AND LEADERSHIP EXPERIENCE

2020-present	ASES Education Committee – Committee Member
2020-present	AOSSM Research Committee – Committee Member
2020	Rothman Burnout Committee – Committee Member
2019-present	AAOS Shoulder and Elbow Evaluation Committee – Committee Member
2019-present	AOSSM Enduring Education Committee – Committee Member
2014-present	AAOS Resident Assembly - Technology Committee Member Committee within the Resident Assembly charged with creation and maintenance of the resident assembly website, communication between resident members, etc.
2014-present	House Staff Quality Improvement Committee – Resident Member Committee dedicated to improving quality of care and patient safety though resident guided projects in collaboration with the hospital and GME leadership

English Papers 7 "Sport-related elbow injury"

Feb. 4th (Sat) 12:15～12:30
Room 1 (Yamagin Kenmin Hall 2F Main Hall)

English Papers 7 (L7-3)

Risk Factors for Throwing-Related Shoulder and Elbow Pain in Adolescent Baseball Players: A Prospective Study

Tsuyoshi Tajika[1], Noboru Oya[2], Takuro Kuboi[2], Fumitaka Endo[2], Tsuyoshi Ichinose[2], Daisuke Shimoyama[2]

[1]Graduate School of Health Science, Gunma University, Japan,
[2]Department of Orthopaedic Surgery, Gunma University, Japan

Purpose: To evaluate the changes in physical and developmental characteristics during 1 year with respect to throwing-related shoulder and elbow pain in adolescent baseball players.

Methods: This 1-year prospective follow-up study investigated 164 baseball players aged 7 to 13 years. Player data (age, height, weight, field position, and pitch count), lower extremity muscle tightness, and range of motion (ROM) of the shoulder, elbow, and hip joints were assessed during the 2016 and 2017 preseason medical examinations. After the 2016 season, the participants completed questionnaires related to throwing-related shoulder and elbow pain, defined as an inability to play for ≥1 week because of elbow or shoulder difficulties. For study participants with and without throwing-related shoulder or elbow pain during the 2016 season, we conducted univariate and multivariate logistic regression analysis to identify risk factors for throwing-related shoulder or elbow pain.

Results: Overall, 21 players (12.8%) reported a shoulder pain episode, 56 players (34.1%) had an elbow pain episode, and 70 players (42.7%) reported having experienced shoulder and/or elbow pain during the 2016 season. In multivariate logistic regression analysis, (1) shoulder pain was associated with 2016 preseason height (odds ratio [OR], 1.06; P = .01) and change in dominant-side elbow extension ROM from 2016 to 2017 (OR, 1.12; P = .02); (2) elbow pain was associated with change in weight from 2016 to 2017 (OR, 1.21; P = .014); and (3) throwing-related shoulder and/or elbow pain was associated with greater 2016 preseason height (OR, 1.04; P = .03) and an increase in height from 2016 to 2017 (OR, 1.17; P = .03).

Conclusion: Our results indicated that adolescent baseball players who were taller in the preseason and those with an increase in height over the 1-year study period faced significant risks for developing throwing-related shoulder and/or elbow pain.

English Papers 7 "Sport-related elbow injury"

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English Papers 7 (L7-4)

Effect of Quantitative Partial Valgus Stress During Baseball Pitching on Ball Velocity and Subjective Pitch-Effort

Yusuke Kobayashi[1], Yoshikazu Kida[1], Kenta Takatsuji[1], Tsuyoshi Sukenari[1], Naoki Okubo[1], Okihiro Onishi[2], Ryota Kojima[3], Takashi Seya[1], Toru Morihara[4], Kenji Takahashi[1]

[1]Department of Orthopaedics, Graduate School of Medical Science, Kyoto Prefectural University of Medicine, Japan,
[2]Department of Orthopaedics, Saiseikaisuita Hospital, Japan,
[3]Department of Orthopaedics, Marutamachi Hospital, Japan,
[4]Marutamachi Rehabitation Clinic, Japan

【Background】Excessive elbow valgus stress can often cause pitching elbow injuries, and rehabilitation is usually required before an athlete can resume playing. However, there is a lack of information on the partial load rehabilitation of pitching elbow injuries caused by valgus extension overload based on elbow valgus stress. The purpose of this study was to clarify how quantitative partial elbow valgus stress while pitching affects ball velocity and subjective pitch-effort.

【Methods】Forty-six male baseball pitchers participated in this study. Each player wore a wearable device on the elbow that collected their pitch parameters. Ball velocity was measured using a radar gun. Each elbow valgus stress was measured while each player was instructed to throw five fastballs at full effort. Then, based on the average stress of the five throws (100% partial valgus stress), the 75% and 50% stresses were calculated (75% and 50% partial valgus stress, respectively). Each pitcher continued to pitch until the number of pitches thrown at the targeted elbow stress reached five. Each player was asked about their subjective pitch-effort after completing each type of partial valgus stress pitch. Outcomes were statistically evaluated using either a one-way repeated measures analysis of variance or two-way analysis of variance.

【Results】The ball velocity was 72% (95% confidence interval [CI], 69%-75%) and 58% (95% CI, 55%-61%) during the 75% and 50% partial valgus stress, respectively ($P < .001$). Subjective pitch-effort was 41% (95% CI, 38%-44%) and 19% (95% CI, 16%-22%) while pitching at 75% and 50% partial valgus stress, respectively ($P < .001$).

【Conclusions】It may be desirable to instruct pitchers to throw at less than 20% subjective pitch-effort of the max if they want to pitch at 50% partial valgus stress. Elbow valgus stress might correlate with ball velocity at 75% partial valgus stress pitch. These results could enable clinicians and coaches to perform safer return-to-throwing programs and prevent excessive load on the elbow.