

surfaces. The articular maps were divided into different functional zones that were labeled numerically for each bony surface. Outerbridge classification was used for the evaluation of the severity of the cartilage lesions. A maximum of the 3 most significant articular lesions recorded on the data sheet was entered into the database. Of the 1,000 patients, 874 (87.4%) were noted to have chondral lesions and 507 (50.7%) to have meniscal tear. We have not found any increased incidence of chondral lesions or increased severity of chondral lesions (Outerbridge classification) in patients with meniscal tear in comparison with patients without meniscal tear. Comparing patients with horizontal cleavage and complex meniscal tears and patients with other type of meniscal tear increased incidence of chondral lesions (88.5% v 68.9%, respectively,  $P < .001$ ), increased severity (type III and IV Outerbridge classification) of chondral lesions (53.4% v 29.1%, respectively,  $P < .001$ ), and increased incidence of patients having more than one chondral lesion (65% v 32.7%, respectively,  $P < .001$ ) was found for the first group. In conclusion, patients with meniscal tears are not associated with increased incidence and severity of chondral lesions, in comparison with patients without meniscal tear. On the contrary, complex and horizontal cleavage meniscal tears are highly associated with increased incidence and severity of cartilage degeneration, in comparison with other types of meniscal tears.

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#### **Clinical Results of Meniscal Repair Using the Bionx Arrow (SS-26)**

**Purpose:** The all-inside technique using the Bionx Arrow has become a popular method for repairing meniscal tears. The few published clinical studies have been promising, although their results were based on relatively small sample sizes and short-term follow-up. The present study, with longer follow-up and larger numbers, does not demonstrate encouraging results. The clinical efficacy, success and failure rates, and associated complications of meniscal repair utilizing the Arrow with a minimum follow-up of three years are described. **Type of Study:** consecutive series. **Materials and Methods:** 60 consecutive meniscal repairs (in 57 patients) exclusively utilizing the Arrow were studied. Follow-up averaged 54 months. The average age of the patients was 27 years (range 13-53). The ACL was normal in 12 knees (12 repairs). 42 patients (45 repairs) underwent concomitant ACL reconstruction. One patient (2 repairs) had radio-frequency shrinkage of the ACL. One patient (one repair)

underwent concomitant arthroscopic fixation of a tibial eminence fracture. **Results:** Of the 60 repairs, 17 repairs (28%) were documented as failures by repeat arthroscopy or MRI. 5 of 12 repairs (42%) performed in knees with an intact ACL failed. 9 of 45 menisci (20%) repaired in conjunction with an ACL reconstruction failed. The remaining 3 failures occurred in knees with unsuccessful ACL procedures. 15 out of 57 patients (26%) underwent a second operation because of the failed primary repair, and a 16th patient whose repair had failed deferred a reoperation, as he had sustained a pulmonary embolism after the initial surgery. **Conclusions:** This consecutive series has the largest sample size with the longest follow-up in the literature. Contrary to previous studies with good clinical results, this series revealed a 28% failure rate and significant postoperative complications such as chondral scoring and fixator breakage. This study raises concerns regarding continued liberal use of the Bionx Arrow, leading the senior author to abandon this technique.

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#### **FastFix Meniscal Repair (SS-27)**

From August 2001 until August 2003, 91 menisci in 76 patients were repaired using the FastFix system. ACL reconstruction was performed in 64 patients (85%). Twenty-three patients had significant chondral injuries. One to six sutures (avg. 3.12) were used in the medial meniscus repairs. One to four sutures (avg. 1.6) were used in the lateral meniscus repairs. Fifty were red/red tears and forty-one were red/white tears. Tear patterns were classified as 71 vertical longitudinal, 12 peripheral detachments, 4 bucket handle, 1 radial, and 3 combines (1 vertical longitudinal and horizontal cleavage, 1 vertical longitudinal and flap, and 1 vertical longitudinal and radial). Patients satisfaction was very high with much less morbidity than an inside out repair. Pitfalls and problems encountered with the procedure were 1) Difficulty in proper suture positioning with the straight delivery system 2) Failure of the fixation to deploy 3) Difficulty in deploying the second fixator 4) Loss of fixation purchase during knot tightening 5) A residual loop in the knot after tightening 6) Failure to reach the rim with the fixator in large bucket handle type fragments. These problems were overcome with 1) The use of a curved inserter 2) Rotating the inserter prior to deploying the fixator 3) Modifying the fixator with a thumb stop 4) Using a smooth continuous pull for initial knot pull down followed by a knot pusher for cinching 5) And not using the device for large thick bucket handle

fragments. At an average follow-up of 4.9 months (range 1 month to 4.3 years) two patients required partial meniscectomy (1 at 5 months and 1 at 6 months) for non-healing. No patient had neurovascular complications or fixators palpable under the skin.

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### **Preoperative and Postoperative Magnetic Resonance Arthrograms in Shoulders After Arthroscopic and Open Anterior Stabilization in a Prospective, Randomized, Clinical Trial (SS-28)**

To evaluate preoperative gadolinium-enhanced MR arthrograms (MRA) with MR arthrograms obtained six months postoperatively in shoulders that have undergone either arthroscopic or traditional open anterior stabilization using a bioabsorbable suture anchor in a prospective, randomized clinical trial. Sixty consecutive patients who presented with chronic anterior shoulder instability who failed at least six months of nonoperative treatment were randomized to either arthroscopic or open stabilization groups. All patients underwent MR arthrograms preoperatively, the findings of which were compared to intraoperative pathology. Six months following anterior stabilization, 45 of the 60 patients underwent a second MR arthrogram to assess 1) postoperative changes in comparison to the pathology noted on preoperative studies, 2) the postoperative MRA differences between open and arthroscopic stabilization, 3) early clinical results in comparison to postoperative MRA changes. Intraoperative findings correlated well with pathological changes noted on preoperative MRA. In 90% of the postoperative shoulders at MRA, a type I "seamless" anatomical restoration of the capsulolabral complex was noted regardless of operative technique. In 10% of the cases, a type II "cleft" or type III "noncontiguous" capsulolabral attachment site was noted. These MR findings, however, did not correlate well with clinical results, subjective shoulder ratings or patients' perception of stability. Preoperative MR arthrograms in shoulders with anterior instability allow an accurate diagnosis of intra-articular pathology that correlates well with operative findings. Arthroscopic and open stabilization techniques result in similar intra-articular findings by MRAs at six months postoperatively. The MRA studies that demonstrated less than anatomical restoration of the capsulolabral complex postoperatively correlated poorly with subjective and objective clinical outcomes.

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### **Results of Arthroscopic Bankart Repair Using Suture Anchors in Traumatic Anterior Shoulder Instability (SS-29)**

**Background:** The purpose of this study was to prospectively evaluate the surgical outcome of arthroscopic Bankart repair using suture anchors in patients with recurrent traumatic anterior shoulder instability with a minimum follow-up of two years. **Materials:** We studied 53 patients with a mean age of 25.3 years (16-41). The study group consisted of 45 men and 8 women. The mean follow-up was 2.2 (2-4.3) years. Patients were evaluated prospectively according to the Rowe-score. **Results:** After 2.2 years 3 patients suffered from a single redislocation, 2 patients had recurrent dislocations which means an overall redislocation rate of 9.4%. Three of the five redislocators had a traumatic redislocation. The average Rowe-score increased to 92.4 points from 32.1 points preoperatively. At final follow-up, 85.9% of the patients had returned to their preoperative sports level. **Conclusions:** Our results in this series demonstrate the efficacy of arthroscopic bankart for the treatment of recurrent traumatic anterior shoulder instability repair using suture anchors. It allows the surgeon to reliably correct the labral detachment and the capsular redundancy while preserving motion and minimizing morbidity. Although it is a highly demanding technique, it can yield comparable results to open procedures when a correct indication is carried out.

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### **Arthroscopic Bony Bankart Repair for Chronic Recurrent Traumatic Anterior Glenohumeral Instability (SS-30)**

**Purpose:** A bony Bankart lesion associated with chronic recurrent traumatic glenohumeral instability has traditionally been treated with only soft tissue repair and/or open bone grafting if the glenoid defect was large. However, we recognized that the bony Bankart lesion could be reconstructed arthroscopically, even if it was chronic with a large osseous defect, because it is possible to separate the bony fragment from the glenoid neck together with the labroligamentous complex. The purpose of this study was to evaluate the postoperative outcome of an arthroscopic bony Bankart repair for chronic recurrent traumatic anterior glenohumeral instability, including "inverted-pear" type glenoid bone deficiency. **Methods:** A consecutive series of 41 shoulders with chronic recurrent traumatic glenohumeral instability underwent arthroscopic bony Bankart repair. Subjects