Open repair of the detached capsulolabral complex has been regarded as the gold standard since Rowe presented results with a recurrence rate of 3.5% in 1978 [18]. This technique includes the use of curved drill holes and is technically extremely demanding, even for skilled shoulder surgeons. The introduction of suture anchors has considerably facilitated the procedure, and results appear to have remained equally good [8, 12]. The main drawback of the open Bankart procedure is that it often results in restriction of external rotation [8, 10, 12]. This restriction appears to be less after arthroscopic procedures [10, 15]. One advantage of an open Bankart procedure is that, unlike most arthroscopic procedures, it does not rely on the quality of the capsulolabral complex. Most arthroscopic procedures are reported to have a recurrence rate of 10–20% [1, 22, 23], and one study has reported a recurrence rate as high as 49% [21]. The extra-articular Bankart repair using Suretac fixators as described by Resch et al. [15] is the arthroscopic procedure that is technically closest to an open repair, as it does not rely on the quality of the capsulolabral complex. The recurrence rate for the extra-articular arthroscopic Bankart repair with a minimum follow-up of 18 months has been reported to be approximately 6–9% [15]. The development of degenerative changes after traumatic shoulder dislocations has been reported after both surgical and conservative treatment [6, 16, 19]. However, it is not known whether stabilization can retard or even stop the process.

It is known that the intraosseous implantation of absorbable materials can cause increased osmotic pressure or a foreign-body reaction, resulting in the development

**Abstract** This study performed an unbiased reexamination of patients who at least 2 years previously had undergone an arthroscopic extra-articular Bankart repair and prospectively evaluated the development of degenerative changes in the shoulder. Two unbiased observers who had never seen the patients before and had in no way been involved in the treatment of the patients were given unlimited access to the patients’ files, surgical reports, and radiographs. Of the 80 patients 72 (90%) attended the follow-up 42.5 months (24–66) after the index procedure. Failures in terms of stability (redlocations and subluxations) were recorded in 14% of the patients. The Rowe score was 97 points (51–100); the Constant score was 94 (56–100) in injured shoulders and 97 points (80–100) in noninjured shoulders (P=0.002). A return to the preinjury level of activity was recorded in 73% of the patients. There was a significant increase in degenerative changes between the pre- and postoperative radiographic assessments (P<0.0001). At 2- to 5-year follow-up therefore the extra-articular arthroscopic Bankart repair resulted in stable and well-functioning shoulders in a high percentage of patients. However, the signs of radiographic degenerative changes increased between the preoperative assessments and the 2- to 5-year follow-up.

**Keywords** Shoulder · Arthroscopic · Extra articular-Bankart repair
of cystic changes seen on radiographs [3, 10]. However, no previous studies report on the radiographic appearance of the drill holes after implanting an absorbable material extra-articularly in the shoulder region in a large cohort. In a follow-up study it is important to reexamine as high a percentage as possible of the initial cohort. However, some previous important studies on the results after shoulder stabilization suffer from a low follow-up rate [16, 18]. Another potential problem is that reexaminations made by the surgeon or someone working at the same institution can include an inadvertent bias.

On the basis of these considerations the aims of the present study were: 1. to perform an unbiased reexamination of patients who a minimum of 2 years previously had undergone an arthroscopic extra-articular Bankart repair; (b) to achieve a minimum follow-up rate of 90%; (c) to analyze carefully the causes of failures in terms of stability; (d) to evaluate the development of radiographic degenerative changes in a prospective fashion; and (e) to evaluate the radiographic appearance of the drill holes a minimum of 2 years after using a polygluconate copolymer for extra-articular shoulder stabilization.

**Patients and methods**

**Inclusion criteria**

Eighty patients fulfilling the following criteria were included in the study: (a) living in Austria and operated on at the Landeskrankeanstalten in Salzburg between April 1994 and September 1997; (b) suffering from recurrent (two or more) posttraumatic shoulder dislocations; (c) presence of a Bankart lesion at the index procedure; (d) an extra-articular arthroscopic Bankart repair performed at the index operation using only Suretac fixators (Smith & Nephew Endoscopy, Andover, Mass., USA); and (e) minimum follow-up of 24 months.

**Unbiased observers**

Two unbiased observers, one orthopedic surgeon (J.K.) and one physiotherapist (C.K.), made all the follow-up examinations. The observers came from another country (Sweden), had never seen the patients before, had never worked at the institution, and were in no way involved in the treatment of the patients. The observers were given unlimited access to the patients’ files, surgical reports, and radiographs.

**Surgical technique**

The patient was placed in a beach-chair position. In addition to the classic posterior portal for the arthroscope, two anterior portals were used, a standard anterior superior portal and an anterior inferior portal located 1.5 cm inferior to the coracoid process. This portal was utilized for the trans-subscapular approach. Intra-articularly the traumatized glenoid labrum and the capsule were detached from the bony rim. The glenoid rim was then abraded using a 4.5-mm abrader burr, and two or three shallow notches were created in the glenoid rim approximately at 5 o’clock, half past 3 o’clock, and possibly also at 2 o’clock (in a right shoulder). The patient’s arm was placed in 20–30° of external rotation. A metal sheath with a blunt trocar was introduced through the inferior portal and the “slalom approach” [14] was utilized to reach the capsule at the anterior joint line. The capsule was then repositioned on the most inferior notch on the glenoid rim and a capsular shift was assessed. The blunt trocar was then removed and the serrated end of the trocar prevented the capsule from slipping. A cannulated drill holding a guide wire was introduced through the trocar. The drill was then placed in the bony notch close to the glenoid cartilage under arthroscopic control. It was drilled to a maximum depth of 18 mm, the locking mechanism was released to free the guidewire, and the drill was extracted. A Suretac fixator was introduced over the guide-wire and seated using a cannulated driver (Figs. 1, 2). The procedure was then repeated for the middle notch. If the labrum was detached superior to the midline of the glenoid cavity, a repair was performed using an intra-articularly positioned Suretac fixator at this level [14, 15].

**Rehabilitation**

Postoperatively the patient’s arm was immobilized in a light shoulder bandage for 3 weeks. Between the fourth and sixth weeks up to 90° of flexion and external rotation to a neutral position was permitted. After 6 weeks exercise was permitted in all planes, including external rotation. Sports activities were resumed from the