



ELSEVIER

ORIGINAL ARTICLE

The main cause of instability after unconstrained shoulder prosthesis is soft tissue deficiency

Jean Kany, MD^{a,*}, Jijo Jose, DNB^b, Denis Katz, MD^c, Jean David Werthel, MD^d,
 Padmanaban Sekaran, MSc PT^e, Rajkumar S. Amaravathi, DNB^f, Philippe Valenti, MD^d

^aShoulder Department, Clinique de l' Union, Saint Jean, France

^bDepartment of Orthopedics, Lakshmi Hospital, Ernakulam, India

^cShoulder Department, Clinique du Ter, Ploemeur, France

^dParis Shoulder Unit, Institut de la Main, Clinique Bizet, Paris, France

^eDepartment of Physiotherapy and Rehabilitation, Sparsh Hospital for Advanced Surgeries, Bangalore, India

^fDepartment of Orthopedics, Arthroscopy and Sports Medicine, St John's Medical College Hospital, Bangalore, India

Background: Instability is one of the major causes of failures in unconstrained anatomic total shoulder arthroplasty (TSA). This study reviewed the instabilities that may occur in an anatomic shoulder platform system to identify its potential predictors. We hypothesized that soft tissue deficiency was the main cause of instability and that the best treatment option would be conversion to a reverse shoulder arthroplasty (RSA).

Materials and methods: Between 2003 and 2013, we reviewed 27 patients who experienced postoperative instability, and the overall incidence was 5.07%. There were 8 hemiarthroplasties (HAs), 14 TSAs with metal-backed glenoid components, and 5 TSAs with cemented glenoid components.

Results: We reported 10 isolated subscapularis tears, 6 massive rotator cuff tears, 8 component malpositions, 2 component dissociations or loosening, and 1 humeral shortening. These dislocations occurred early, within the first 6 months postoperatively, in 20 patients and later in 7. Specific procedures were performed in 8 patients, 17 were converted successfully to a RSA, and no surgery was done in 2 patients. At the last follow-up (mean, 36.96 months) Constant scores, Subjective Shoulder Value, and Simple Shoulder Test scores improved significantly to 49.9, 56.4%, and 6.9 of 12, respectively ($P < .05$). None of the 25 patients who were revised were categorized as failures. Patients who underwent conversion had a better outcome than those who had other specific procedures ($P = .001$).

Conclusion: The major cause of instability in our series was soft tissue deficiency. Most of the patients required conversion, and the platform system we used made conversions easier.

Level of evidence: Level IV; Case Series; Treatment Study

© 2017 Journal of Shoulder and Elbow Surgery Board of Trustees. All rights reserved.

Keywords: Instability; subscapularis; rotator cuff; platform system; total shoulder arthroplasty; conversion

The Ethic Committee of Clinique de l'Union, Saint-Jean, France approved this study.

*Reprint requests: Jean Kany, MD, Clinique de l' Union, Boulevard de Ratalens, Saint-Jean F-31240, France.

E-mail address: jean.kany@clinique-union.fr (J. Kany).

Instability is one of the most commonly addressed complications of unconstrained total shoulder arthroplasty (TSA). In a large cohort series, Wirth and Rockwood²⁴ reported that horizontal instability occurred in 5.2% of 1496 total

Table I Distribution of patients

Variables	HA	TSACG	TSAMB	Total
	(n = 117)	(n = 156)	(n = 273)	(N = 546)
	No. (%)	No. (%)	No. (%)	No. (%)
Patients lost to follow-up	1	7	6	14 (2.56)
Remaining patients for the study	116	149	267	532
Patients with shoulder prosthesis instability	8 (6.89)	5 (3.35)	14 (5.24)	27 (5.07)
Glenoid dysplasia (type B, C, or anterior defect)	4/8 (50)	1/5 (20)	9/14 (64)	14/27 (51.8)

HA, hemiarthroplasty; TSACG, total shoulder arthroplasty cemented glenoid component; TSAMB, total shoulder arthroplasty metal-backed component.

shoulders. In a meta-analysis, Bohsali et al¹ found a prevalence of 4.9% of unconstrained TSA instability (superior, 3%; posterior, 1%; and anterior, 0.9%). With an unconstrained shoulder prosthesis, instability can occur in any direction or combination of directions and can happen early or late after the procedure. Instability is rarely the result of a serious traumatic event. The commonly described causes are quite specific. These typically include any or all of incorrect component positioning in height or version, or both, at the time of surgery, improper component sizing, soft tissue imbalance, neurologic damage, or implant loosening.^{9,15,16,24}

In such a situation, specific revision procedures can be proposed, depending on the causes of the prosthetic instability, such as repositioning or resizing the component, bone block procedures, and soft tissue repairs, with variable and unpredictable results.^{9,15,18,24} Another option is the conversion from an anatomic to a reverse shoulder arthroplasty (RSA), especially when there is a rupture of the subscapularis along with a posterolateral escape of the humeral head, which is a truly devastating complication.

Since 2003, we have been using a completely convertible shoulder platform system with the advantage of easier and less cumbersome revisions (Arrow; FH Orthopedics, Mulhouse, France). This system has a universal humeral stem with both metal-backed (MB) and cemented (CG) options for the glenoid implant. During conversion to a reverse prosthesis, the surgeon can remove the humeral head and implant a metallic tray with a polyethylene bearing without removing the humeral stem. If the glenoid implant is a noncemented MB device, the conversion is easier by only removing the polyethylene shell, leaving the well-fixed glenoid baseplate, which will support the glenosphere.

A good understanding of the causes for instability after shoulder arthroplasty is essential to prevent such complications at the time of surgery and to efficiently manage the problem if it does occur postoperatively. Only a few studies have reported the results, advantages, and complications of such a completely convertible shoulder system.^{3,10}

We hypothesized that the incompetence of the soft tissue surrounding the prosthesis—especially the rupture of the subscapularis tendon—was the main cause of instability of unconstrained shoulder platform systems and that conversion

would be the best treatment option. The main purpose of this study was to review our patients with instability after anatomic shoulder prosthesis to identify its potential predictors. The secondary purpose was to report the clinical and radiologic results of our revision procedures in a retrospective study of 27 patients.

Materials and methods

This is a retrospective case-control study of 546 primary anatomic shoulder arthroplasties performed by the 3 senior surgeons of our group (D.K., J.K., and P.V.) at 3 different institutions between 2003 and 2013 (Table I). Written information forms and consents duly signed by the patients were obtained before the surgical procedure. There were 273 TSAs with ingrowth MB glenoid (TSAMB) components, 156 TSAs with CG (TSACG) components, and 117 hemiarthroplasties (HAs). The study excluded 14 patients who were lost to follow-up within 3 months; hence, the study cohort comprised 532 patients.

We retrospectively analyzed all patients who had a postoperative instability of their shoulders after an anatomic shoulder arthroplasty performed during this interval. The patients who developed instability after acute trauma on the operated shoulder were excluded as unrelated to the surgical procedure. Any shoulder with a confirmed infection identified preoperatively or intraoperatively was excluded. According to our infection departments, a minimum of 5 cultures in each revision case was performed to rule out a possible low-grade infection. All cultures at our institutions were held for 14 days to assess for *Propionibacterium acnes*.

Postoperative instability was diagnosed in 27 patients (21 women, 6 men), which represents 5.07% of the cohort. Patients were a mean age of 66.3 years (range, 42-83 years) at the time of the index surgery. The indications were malunion after primary osteoarthritis (OA) of the shoulder in 13, OA after recurrent anterior dislocation of the shoulder in 6, acute 4-part proximal humeral fracture in 3, proximal humeral fracture in 2, post-traumatic OA in 2, and posterior instability after an open Latarjet procedure in 1. The right shoulder was implicated in 22 patients and the dominant side in 26.

Prior surgery (index procedure)

No patient had undergone prior surgery in the shoulder at the time of the index procedure except 1 patient who had undergone a Latarjet procedure for traumatic anterior instability (Table II). All index procedures were performed with the patient semiupright or supine with

Download English Version:

<https://daneshyari.com/en/article/5710123>

Download Persian Version:

<https://daneshyari.com/article/5710123>

[Daneshyari.com](https://daneshyari.com)