

Acetabular All-Suture Anchor for Labral Repair: Incidence of Intraoperative Failure due to Pullout

J. W. Thomas Byrd, M.D., Kay S. Jones, M.S.N., R.N., Cynthia L. Loring, R.N., and Stephanie L. Sparks, C.S.T.

Purpose: To report on the incidence and features of intraoperative anchor pullout in a consecutive series of patients undergoing arthroscopic labral repair of the hip. **Methods:** Over an 18-month period, 434 consecutive cases underwent labral repair by a single surgeon with a particular anchor system. The following data were recorded: (1) age and gender of all cases; (2) number of anchors used; (3) number of cases in which intraoperative anchor failure occurred; (4) number of anchors that failed; and (5) age and gender of those cases in which anchor failure occurred. Failures were reported for 3-month intervals. One patient underwent repair with an alternative anchor system during this time period and was excluded. **Results:** Mean age was 34.2 (14-71) years with 180 males and 254 females. A total of 2,007 anchors were used, averaging 4.6 per case (1-8). Thirty-three anchors pulled out among 30 patients, representing a 1.6% incidence among all anchors. Mean age among pullouts was 37.8 (17-54) years with 11 males and 19 females. There was no difference compared with patient population in which no anchor pulled: mean 33.9 (14-71) years ($P = .085$) with 169 males and 235 females ($P = .578$). Pullouts were evenly distributed over the 3-month intervals (4, 4, 6, 6, 5, 8). Pullout was mostly due to failure to securely imbed the anchor in bone. Only 2 were known to pull out in the presence of being securely seated in bone. **Conclusions:** These data support that the security of this particular all-suture anchor at implantation is exceptionally reliable for a single experienced surgeon, and there is no demonstrable learning curve. **Level of Evidence:** Level IV, retrospective review of a case series.

There is a dearth of literature on the biomechanical properties of labral repair in the hip. Only one article has studied the pullout strength of suture anchors in the acetabulum. In 2010, Barber et al.¹ published a cadaver study investigating 6 different bioabsorbable and bioinert anchors. They noted that the results were generally good in terms of displacement and cyclical failure loads, but expressed concern that anchors used in the shoulder may not perform as well

in the hip, and therefore should be specifically tested in the acetabular rim.

More recently, Barber et al.² studied the biomechanical properties of the sutured labrum, looking at different suture placement patterns and devices for passing the sutures. They observed lower loads to failure with horizontal mattress sutures compared with vertical or oblique patterns, and less cyclic elongation and displacement associated with smaller diameter suture passing devices. Other studies have looked at clinical results comparing looped sutures with labral-based fixation techniques and found no difference between the two.^{3,4}

Laboratory studies have looked at safe methods for avoiding perforation of the acetabular surface.⁵⁻⁷ One case series reported on damage encountered with anchor perforation of the acetabulum, advocating smaller diameter, nonrigid anchors to help minimize the repercussions.⁸ Another case series described problems with perforation of the psoas tunnel, often a consequence of trying to avoid perforating the acetabulum and also proposed using smaller diameter anchors.⁹

In the presence of the recognized problems associated with anchor placement around the hip, and the absence

From the Nashville Sports Medicine Foundation (J.W.T.B., K.S.J.); and Saint Thomas Surgery Center Midtown (C.L.L., S.L.S.), Nashville, Tennessee, U.S.A.

The author reports the following potential conflicts of interest or sources of funding: J.W.T.B. receives grants and consulting fees from Smith & Nephew and has stock/stock options in A3 Surgical. Full ICMJE author disclosure forms are available for this article online, as supplementary material.

Received January 26, 2017; accepted September 27, 2017.

Address correspondence to J. W. Thomas Byrd, M.D., Nashville Sports Medicine Foundation, 2004 Hayes Street, Suite 100, Nashville, TN 37203, U.S.A. E-mail: info@nsmoc.com

© 2017 by the Arthroscopy Association of North America

0749-8063/1789/\$36.00

<https://doi.org/10.1016/j.arthro.2017.09.049>

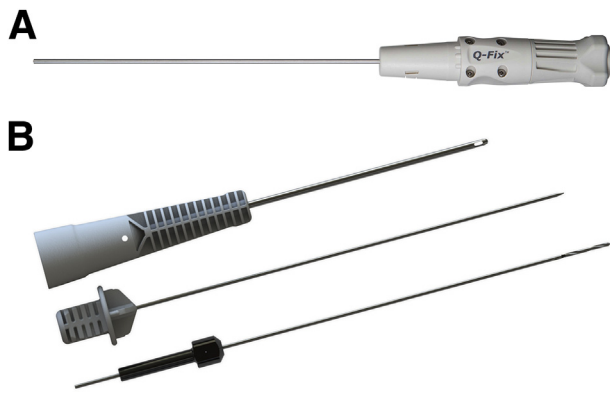


Fig 1. (A) The single-loaded Q-Fix anchor and (B) straight drill guide assembly. The 1.8-mm-diameter anchor is passed through a 2.0-mm-diameter, 22.3-mm-length drill hole (© Smith and Nephew Endoscopy, Andover, MA).

of any clinical data on in vivo anchor pullout, these authors endeavored to investigate this further. In the experience of these authors, it is likely that the biggest problem associated with anchor pullout is that which occurs while attempting to tie the suture. Unlike the shoulder where the labrum is an integral part of the capsulolabral complex and a capsular shift is performed leaving the repair with some intrinsic tension, in the hip, the capsule attaches separately and it is likely that the greatest force to which the anchor is exposed is that at time zero when the suture is tied.¹⁰ Thus, the purpose of this study was to report on the incidence and features of intraoperative anchor pullout in a consecutive series of patients undergoing arthroscopic labral repair. It was hypothesized that a small diameter, all-suture suture anchor may exhibit favorable characteristics in terms of pullout at the time of implantation and securing the labral repair of the hip.

Methods

Beginning September 10, 2014, a 1.8-mm all-suture suture anchor (Q-FIX, Smith & Nephew Endoscopy, Andover, MA) was used exclusively by a single surgeon for labral repair in the hip (Figs 1 and 2). Over the ensuing 18-month period (ending March 10, 2016), all surgical records (561) were retrospectively reviewed, recording the following data: (1) the age and gender of all cases; (2) the number of cases in which labral repair was performed; (3) the number of anchors used; (4) the number of cases in which intraoperative anchor failure occurred; (5) the number of anchors that failed; and (6) the age and gender of those cases in which anchor failure occurred. Anchor location was not recorded. Failures were reported for each 3-month interval over the 18 months of the study. Inclusion criteria for the study cohort were any patient undergoing labral repair. Failures were defined as any wasted anchor, and these were documented in the records at the time of each procedure. One patient

underwent repair with an alternative anchor system during this time period and was excluded.

A standard technique was used for anchor placement on the capsular side of the labrum (Fig 3).^{11,12} The labrum was first sharply mobilized from the acetabulum and the rim was then prepared with a 5.5-mm burr, reshaping as dictated by the morphology of any accompanying pincer lesion. Viewing from the antero-lateral portal, most anchors were placed percutaneously from a site equidistant between the anterolateral and anterior portals, and sufficiently distal to assure divergence of the anchor from the subchondral surface of the acetabulum. Commonly, any far medial anchors, at or below the 3 o'clock position (of a right hip), would be placed from the anterior portal, providing a more anterior to posterior direction to avoid perforating the psoas tunnel. This was used only if it would not result in perforation of the acetabulum. A variety of suture patterns were used to repair the labrum, dictated by the labral morphology, volume of labral tissue, and pattern of tear.¹³ The labrum was secured with an SMC knot in all cases.¹⁴ No perforations occurred. Anchor pullout typically occurred at 1 of 2 points, although this was not recorded as part of the study. The first would occur when tugging on the anchor after it has been seated, assessing its security. The second point of pullout would occur when the knot was being tied.

An independent sample *t*-test and χ^2 -squared analysis were performed to determine differences between groups. Statistical analyses were performed using SPSS v23 (SPSS, Chicago, IL). Significance was set at $P < .05$.

Results

During the study time period, 434 consecutive patients underwent labral repair with this particular suture anchor system. The average age was 34.2 (range, 14-71) years with 180 males and 254 females. A total of 2,007 anchors were used, with an average of 4.6 per case (range, 1-8). A total of 33 anchors pulled out among 30 patients, representing a 1.6% incidence among all anchors. The average age among patients in whom an anchor pulled out was 37.8 (range, 17-54) years with 11 males and 19 females. There was no statistically significant difference compared with the patient population in which no anchor pulled, which averaged 33.9 (range, 14-71) years ($P = .085$) with 169 males and 235 females ($P = .578$). On a quarterly basis



Fig 2. The length of the all-suture anchor is 15 mm before deployment. When deployed, it collapses to a 3.5-mm-depth, 4.0-mm-wide ball of suture. These must be placed at least 7.0 mm apart (© Smith and Nephew Endoscopy, Andover, MA).

Download English Version:

<https://daneshyari.com/en/article/8796500>

Download Persian Version:

<https://daneshyari.com/article/8796500>

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