

Half-Stained Thread in Shoulder Arthroscopy: An Improved Method of Suture Management

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Abstract: Shoulder arthroscopy is used widely to treat a variety of shoulder pathologies. These include various diagnostic and stabilization procedures such as Bankart repair, treating SLAP lesions, capsular plication, and rotator cuff repair. Sutures are commonly used, particularly in stabilization procedures, with or without the use of suture anchors. Suture management is one of the prerequisites for a successful arthroscopic stabilization procedure. We describe a simple method of aiding suture management. In cases using the suture anchor, the preloaded suture is firstly removed from the anchor, and approximately half the length of the suture is stained with methylene blue. The suture is then reinserted into the same suture anchor. The suture anchor is used in the usual manner. During shoulder arthroscopy, one end of the suture is pulled, if necessary, to determine the direction of the thread, which is readily shown by the methylene blue. This simple maneuver helps the surgeon identify the desired direction of the thread and avoid the common problems of pulling out the suture and twisting the sutures. **Key Words:** Shoulder—Arthroscopy—Suture—Thread—Management.

Shoulder arthroscopy is a well-established procedure for both diagnosis and therapy. Stabilization procedures for treating instability¹⁻⁴ or SLAP lesions^{5,6} or to repair the rotator cuff⁷⁻¹⁰ are commonly described. Unless knotless anchors¹⁰ are used, most of the procedures require the use of sutures. This usually requires one viewing portal and at least 2 working portals. Good suture management is essential in all these procedures. However, the direction of the suture is difficult to determine intraoperatively and the suture

may be pulled in the wrong direction by mistake. We describe a simple modification of the sutures that helps greatly in suture management in shoulder arthroscopy.

SURGICAL TECHNIQUE

Our technique is as follows:

1. If a suture anchor is used in the stabilization procedure, the preloaded suture of the suture anchor is first removed.
2. Approximately half of the length of the suture is stained using methylene blue (50 mg/5 mL).
3. The suture is then blotted dry using dry gauze and reinserted into the suture anchor.
4. The suture anchor is inserted in the usual manner.
5. The suture, with half of the thread already stained, is under direct visualization arthroscopically. The direction of the suture may be

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0749-8063/04/2004-3689\$30.00/0
doi:10.1016/j.arthro.2004.01.017

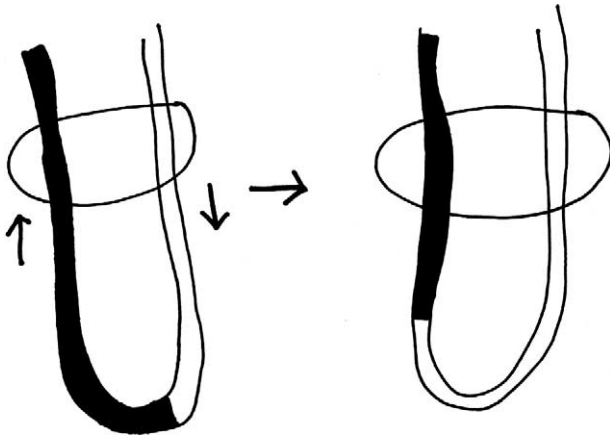


FIGURE 1. Diagram of the half-stained suture. The arrows show the direction of the pull. On the right, it shows instant recognition of the direction of the suture by the half-stained thread.

determined by pulling one end of the suture (Fig 1).

6. A plain suture, such as a No. 2 Ethibond (Ethicon, Somerville, NJ) may be used if no suture anchor is required.

DISCUSSION

Shoulder arthroscopy is a technically demanding procedure that requires a skilled arthroscopist with tremendous experience. Suture management is often very important in therapeutic procedures. Problems arise because of difficulty in identifying the correct end of the suture. This may result in pulling out the suture accidentally or undesirable twisting of the sutures. The authors described a simple modification to the existing sutures. Staining half the length of the sutures allows the direction of pull for the sutures to be easily identified arthroscopically.

The choice of staining agent is important in this method. Ideally, the stain should produce an apparent contrasting effect for instant recognition. The color should be recognizable even after a period of irrigation, and, most importantly, it should remain stable and harmless to the surrounding tissues.

Use of gentian violet intra-articularly has been associated with chondrolysis.^{11,12} However, both methylene blue and indigo carmine may be used in staining the sutures, because no detrimental effect to tissues or

cartilage has been reported with these stains. We use methylene blue because of its darker color and hence greater contrast. We also take several precautions to avoid the stain washing off in the irrigation fluid. First, the sutures must be stained a few minutes before the procedure. We normally ask the scrub nurse to prepare the sutures at least 5 minutes before shoulder arthroscopy. Second, the sutures must be blotted dry before insertion. Finally, exposure of the sutures to the irrigation fluid is limited as much as possible.

Pulling the suture in the right direction during shoulder arthroscopy is an important technical aspect for avoiding pitfalls such as suture pullout and to avoid kinking in the sutures. A greater color contrast may be achieved by using the unstained No. 2 Ethibond suture, if necessary. This technique may be used alone or combined with suture anchors. This simple technique is particularly useful in stabilization procedures that require management of multiple sutures, such as for treating Bankart repair or repairing a SLAP lesion or capsular plication.

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