

Arthroscopic Techniques

A new arthroscopic sliding locking knot: Banarji knot

B. H. Banarji¹, A. Vinoth¹

¹Department of Orthopedics, Sakra World Hospital, Bengaluru, Karnataka, India.

ABSTRACT

Arthroscopic knot tying is a crucial component for a successful arthroscopic shoulder surgery. Knot tying should not be difficult to master or time consuming to perform. This study describes a new sliding locking knot for arthroscopic shoulder surgery and we named it Banarji knot, in the name of the author. It is a low profile, non-bulky, and double locking knot, which makes it a more secure knot.

Keywords: Arthroscopic knot, Sliding locking knot, Double locking, Secure knot, Banarji knot

INTRODUCTION

Arthroscopic knot tying has become an essential surgical skill for practicing arthroscopic surgeons. Success in knot tying is pivotal for achieving results comparable with open surgery and is dependent on numerous factors.^[1] Despite a recent increase in the popularity of knotless suture anchors, arthroscopic knot tying remains an invaluable and important skill for orthopedic surgeons to master.^[2] The ability to successfully approximate tissue using arthroscopic suture and to maintain that approximation for the duration of tissue healing is vital for surgical success.^[3] Arthroscopic glenoid labral reconstruction and rotator cuff repair techniques utilize sliding and non-sliding knots for reattachment of the tissues to the bone. Several knot tying techniques have been described for use in arthroscopic shoulder surgery.^[4]

The importance of knot characteristics, including ease of application, reproducibility, ability to slide through arthroscopic cannulas, ease of setting the lock, knot profile, and reliable initial security, is paramount to the success of arthroscopic capsulolabral procedures as well as arthroscopic rotator cuff repairs.^[3-7] The ideal arthroscopic knot should have optimal loop and knot security, low knot profile, easy to tie, and low incidence of premature or unintended locking. Therefore, it is desirable for the technique of knot tying to be easily reproducible and provide consistent results regardless of the surgeon's experience.^[8] Knot tying should not be difficult to master or time consuming to perform and the knot should not be bulky to avoid knot impingement.^[3] In this study, we aim to describe our innovative arthroscopic sliding locking knot named as Banarji knot. This knot is both sliding and locking, is easily reproducible and low profile.

TECHNIQUE OF BANARJI KNOT

1. Two strands of suture are separated. Post-strand is short and loop strand is long.
2. The post-strand is thrown around the index and middle finger like a loop.
3. Loop strand is caught through first loop, in such a way that it forms a second loop and a double loop is formed now [Figure 1].
4. Now, both the suture strands are passed through the second loop.
5. The shorter strand, that is, the post is held, and the longer strand is gently pulled making sure that knot is not locked, at this point make sure knot is mobile by gently sliding the knot with the surgeon's finger.
6. By pulling the post-strand, knot will slide in. Once the knot is pulled up to the tissue, the knot pusher is used to lock the knot by past pointing and gently pulling the loop strand [Figure 2].
7. Once the locking of the knot is confirmed, multiple half hitches to be applied [Video 1].

ADVANTAGES

1. It is simple and reproducible.
2. Easy steps and less complicated.
3. Low profile knot and does not form a bulky knot, so there is no risk of impingement.
4. Double locking knot, which makes it more stronger.
5. Reduces the surgical time.

*Corresponding author: B. H. Banarji, Senior Consultant, Department of Orthopedics, Sakra World Hospital, Bengaluru, Karnataka, India. banarjibh@gmail.com

Received: 01 June 2021 Accepted: 12 August 2021 Epub Ahead of Print: 01 October 2021 Published: 20 December 2021 DOI 10.25259/JASSM_21_2021

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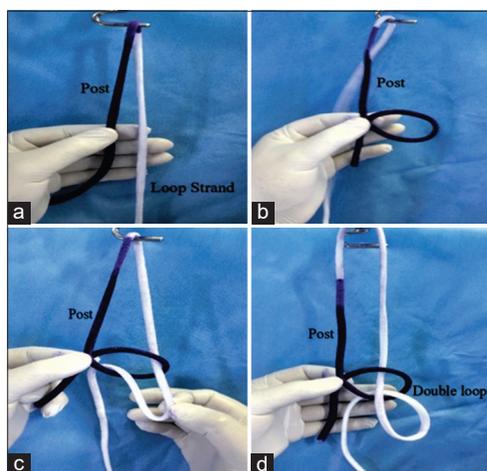


Figure 1: The Banarji knot. (a-d) The knot is constructed by placing post-strand shorter and a loop is formed over the post-strand and loop strand is pulled through the post and formation of double loop noted.

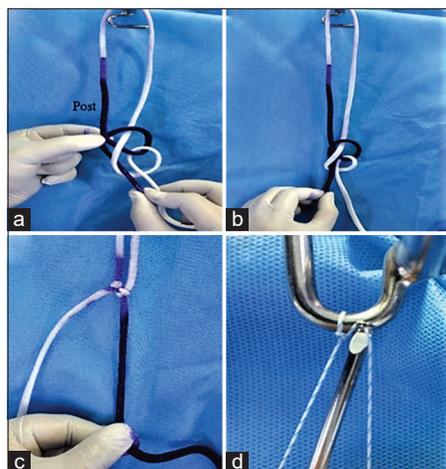


Figure 2: (a-d) Both the suture strands are passed through the second loop and pulling the post strand, knot can slide in. The knot is completed and advanced by pulling the post-strand and locked, which is secured by pulling the loop strand. Final tensioning of the knot done using knot pusher.

DISCUSSION

Given the wide variety of options regarding arthroscopic knot tying, it is important to take the following considerations into account to ensure the best possible outcomes.^[9] Many techniques for tying arthroscopic knots have been described. Mastering knot tying techniques are an essential step in practicing arthroscopic shoulder surgery.^[10]

An important consideration in a surgical repair of musculoskeletal injuries is to maintain the structural integrity of the repair site while healing occurs. Separation of the tissue, even by a few millimeters (more than 3 mm), can be deleterious during healing even if the knotted suture never fails.^[11]

Despite large number of knot options, all effective knots must meet two criteria:

1. The knot must be properly formed so the suture does not slip and cut into itself.
2. Must be easily tightened to ensure maximum strength.^[12]

Our new knot, Banarji knot is very simple, less complicated, and easy to reproduce. Since the loop strand passes through two loops, once its tightened and locked at different points, makes it more stronger, and increases its tensile strength. It's not a bulky knot, hence, risk of impingement is less.

CONCLUSION

Our innovative Banarji knot is simple, time saving, stronger, and relatively less bulky. It is easy to learn, master, and reproducible. We are very optimistic that this knot will help the surgeons in achieving better clinical results, as this is a double locking knot.

Declaration of patient consent

Patient's consent not required as there are no patients in this study.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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How to cite this article: Banarji BH, Vinoth A. A new arthroscopic sliding locking knot: Banarji knot. *J Arthrosc Surg Sports Med* 2022;3:62-3.

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