

“KNOW YOUR KNOT” PRINCIPLES

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It's that time of year again, where didactic year has come to an end for many (hooray!) and the beginning of clinical year has just begun. Whether you are starting off your clinical rotations with general surgery, emergency medicine or OBGYN...etc., it is important to refresh yourself on the various suturing techniques (refer to Nov/Dec 2016 Sutureline edition for various suturing materials used in surgery) as well as the different knot tying techniques, especially basic knots: the simple knot, the square knot and the Surgeon's/Friction knot.

Although I could write out a step by step guide on how to tie various surgical suture knots, Margaret Holland's article on the previous page gives instructions for the traditional square knot. Also, thanks to technology, there are a plethora of online educational videos that demonstrate surgical knot tying. I encourage you to watch these videos multiple times online or until you have the various knot tying techniques down! You can practice on a knot-tying board (specifically designed for knot tying), and obtain old sutures from the hospital or possibly from your PA school. You can always use shoestrings, thread or floss if sutures are unobtainable. Not only will practice and discipline aid you in becoming more skilled with the various suture techniques and basic knot tying, but it will make a lasting impression on your preceptors and patients as well! Before physically practicing your knot tying techniques, I encourage you to familiarize yourself with some basic knot tying principles:

- Recognize the anatomical landmarks of the organ or area where you plan to suture. Know that suturing/tying skin is different than suturing/tying a vessel. Know and familiarize yourself with the proper suture materials (texture, size) used for that specific location of the body.
- Once you throw down a knot, make it firm so that slipping is impossible. Do not tie the knot too tight, as this may cause tissue strangulation.
- If needed, change your stance or body to a position that is the most comfortable to make the perfect throw, but do not get in the surgeon's way!
- Apply tension on the suture, but not too much, as this may cause breakage of the suture or potentially cause tissue damage. Final tension throw should be horizontal.
- Maintain traction on one end of the suture strand to avoid loosening of the knot(s).
- When using absorbable sutures, try to make the knot as small as possible to prevent tissue reaction or minimize foreign body reaction when using nonabsorbable sutures.
- Friction or “rubbing together” of the suture strands when trying to throw down a knot can weaken the integrity of the suture and may cause it to break. Be careful and gentle.
- When suturing and grasping the suture strand with the forceps and/or needle driver, only manipulate the free end of the suture. This will minimize less damage to the structure of the suture material.
- Extra ties/throws are not always better. They usually just add additional bulk. Become familiar as to what suture material requires additional knots.



Speed is great talent to have when throwing down knots, but may result in less than perfect placement of the suture strands. Remember as a student you are learning, so it may be best to apply the concept of “slow and steady wins the race.”