# STUDENT SUTURES 101, BRINGING IT TOGETHER

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As a budding physician assistant student, you will one day encounter the delightful task of suturing either on your surgical, emergency medicine, or other clinical rotations. Especially for students interested in surgery, there is a sense of having "arrived" once you have mastered this skill and can successfully fix a laceration or help close a surgical case. An essential skill, the following is a brief overview of sutures that hopefully you will find useful on clinical rotations for basic laceration repair. (Disclaimer: this article is neither a comprehensive guide to surgical wound closure nor suture material!)

Clinicians all have individual and unique preferences when it comes to suture types. There are, nevertheless, some general principles that students can use when deciding what to use for basic laceration repair.

## Depth of Laceration

First, assess your wound and the depth of injury. Make sure you re- view your anatomy! Determine if you have a multiple layers involved (muscle, subcutaneous tissue) or if the wound/incision can be closed by a single layer. For example, if you have a laceration involving the muscle layer, you may need to use an absorbable suture that can approximate the muscles together and give strength to the wound before closing it with a percutaneous stitch. In the emergency or urgent care setting, you will likely follow this with a non-absorbable layer of simple interrupted sutures to approximate the remainder of the wound. Again, preference is involved here. The goal of closure is to maximize healing and minimize infection, so take this into consideration when deciding how many layers to do.

## Absorbable vs. Non-absorbable

As a general principle, use absorbable for sutures beneath the epi- dermis and non-absorbable for closure that is percutaneous. Makes sense! Absorbable sutures have varying rates of absorption, but typically absorb within four to eight weeks. Non-absorbable sutures are removed at varying lengths of time, depending on location. The following table lists the names of common absorbable and non-absorbable sutures as well as some features of each.

| **Absorbable** | **Features** |
|---|---|
| Chromic Gut | Should be used for approximation in areas that do not have high tension or stress. They may be used in areas of soft tissue or mucosa (such as the oral mucosa). Comes from beef/sheep collagen. |
| Polyglactin 910 (VICRYL®) | Braided suture. Used only for superficial approximation of skin and mucosa. |
| Poliglecaprone 25 (MONOCRYL®) | Monofilament suture. Very pliable for easy tying. Tensile strength is initially high. |
| Polydioxanone (PDS®) | Monofilament suture. Often comes in a violet or blue color. Used for all types of soft tissue and has extended wound support. |
| **Non-Absorbable** | **Features** |
| Silk | Braided suture. Non-absorbable, but loses its tensile strength over time. Not often used to close skin. |
| Nylon (ETHILON®) | Monofilament suture. Synthetic with high tensile strength. Easy for knot-tying and frequently used for laceration repair. |

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|---|---|
| Polypropylene (PROLENE®) | Monofilament suture. Do not adhere to tissue and thus easy to remove. |
| Polyester (ETHIBOND®) | Braided suture. Excellent pliability. |

Table 1. Absorbable and Non-Absorbable Suture Types and Features[3]

## Location and Sizing

In general, larger suture sizes should be used for areas that have significant skin tension, such as the knee. Sutures have assigned number sizes, and the finer the suture the larger the assigned number. For example, a size 3–0 suture is larger than a size 5–0 suture. The best cosmetic results typically are best achieved by using the finest suture possible, taking into consideration wound tension and stress. In general, a 3 –0 or 4–0 suture is appropriate on the trunk, 4–0 or 5–0 on the extremities and scalp, and 5–0 or 6–0 on the face.

Table 2. Suture Size by Location[2]

| Location | Suture Size |
|---|---|
| Mucosal (mouth, genitalia) | 3–0 or 4–0 |
| Trunk | 3–0 or 4–0 |
| Extremities and Scalp | 4–0 or 5–0 |
| Face | 5–0 or 6–0 |

## Suture Removal

For facial lacerations, sutures should be removed in 3-5 days to prevent scarring. Sutures in the scalp, torso, arms, legs, hands and feet are typically removed within 7-10 days, while sutures overlying joints may be left for 10-14 days. Sutures placed in the palms or soles of the feet may require 14-21 days.

So, now you are familiar with various suture materials, as well as some general principles guiding their use. As you are on clinical rotations, you will be ready to “bring it together”!

## References

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3. Dunn DL, ed. Wound Closure Manual. Ethicon, Inc; 2005.