

Flipped Classroom

Simple Interrupted Suture



Disclaimer

A series of booklets (instructions for skills and flipped classroom materials) has been developed by the Clinical Skills Lab team (staff, recent graduates and students) from Bristol Veterinary School, University of Bristol, UK.

Please note:

- Each flipped classroom booklet includes ways to prepare for learning a skill in class; it is acknowledged that there are often other approaches. Before using the booklets, students should check with their university or college to determine whether the approaches illustrated are acceptable in their context or whether an alternative resources should be used.
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Introduction

This flipped classroom is designed to be used as preparation for practical classes that involve holding instruments and performing a simple interrupted suture.

1. Learning Outcomes

- Describe how to correctly remove suture material from a reel (cassette) or packet.
- Describe how to hold needle holders and forceps correctly when suturing.
- Describe how to do a simple interrupted suture.

N.B. The focus of the flipped classroom is on 'knowing how' to do the skills, which will ensure you can get the most out of the time spent in the practical class. However, if you have access to instruments and suturing materials, the flipped classroom can also be used when practising to hold instruments correctly and to perform a simple interrupted suture.

2A: Removing suture material from a reel

Watch the video which has been produced by University of Veterinary Medicine, Hannover (in collaboration with University of Bristol).



<https://www.youtube.com/watch?v=qeUjsEI6NGI>

Helpful Tips:

Pull up the required length of suture material and cut it. Be careful not to contaminate yourself, the instrument or suture material in the process by touching anything non-sterile e.g. by touching the cassette or non-sterile person's hands.

The suture material should be cut a short distance (a few centimeter) above the cassette i.e. leaving a sufficient length that it will be easy for a non-sterile person to grasp next time.

Be careful not to then drag the suture material over, or allow it to touch, any nonsterile area i.e. keep it over a sterile drape.

2B: Remove suture material from a pack



1
Ask an assistant (*whose hands will not be sterile*) to peel back the outer layer of the suture pack without touching the suture material inside.



2
Ask the assistant to drop the inside suture material pack onto a sterile surface e.g. a drape.



3
Hold the sterile suture pack with both hands and open it i.e. tear the second layer of the packaging.



4
Use needle holders to grasp the needle and remove the suture material from the packaging.



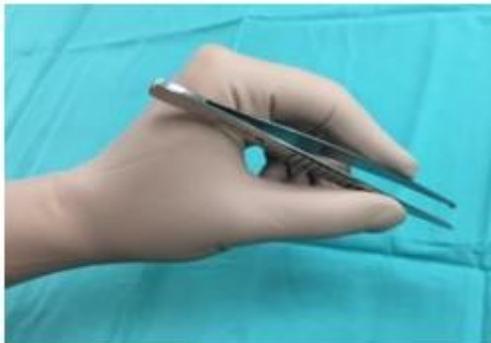
5
It is important to ensure the suture material remains sterile i.e. over the drape.

2C: Holding surgical instruments correctly

Learning to hold instruments correctly is important. Mastering the correct handling technique will make performing surgery with the instruments much easier. Once you have mastered these handling skills it will set you up for many years to come, so it is worth spending the time practising your handling technique now. Plus, correct handling of the instruments will make you look like a surgeon!

The instruments used for suturing are needle holders (Gillies and Mayo Hagar) and rat tooth forceps.

For suturing hold the needle holders with your dominant hand and the rat tooth forceps in your non dominant hand. The correct technique is demonstrated:

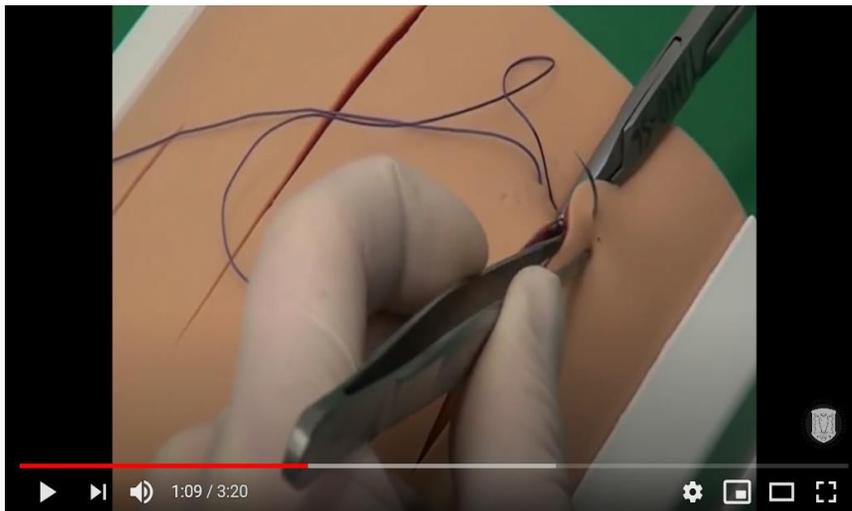


You can practise the correct handling technique at home. If you do not have instruments use:

- A pencil or pen as the forceps
- A pair of scissors instead the needle holders

2D: How to place a simple interrupted suture

Watch the video below, which has been produced by University of Veterinary Medicine, Hannover (in collaboration with University of Bristol). It shows how to place a simple interrupted suture.



https://www.youtube.com/watch?v=8RhWtaJ6_Zw&t=42s

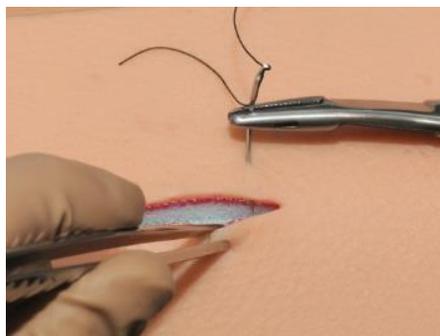
It shows how to tie a surgeon's knot, which is a double throw (twice around the needle holders) followed by a single throw (once around the needle holders) and another single throw (once around the needle holders).

N.B. Sometimes a square knot is used instead, which is similar except for starting with a single throw (once around the needle holders).

Top Tip: It really helps to practise writing down or saying the steps to ensure you know how to perform the skill.

2E: Tips for learning suturing skills

- Grasp the needle with the needle holders approximately 1/3 of the way along its length (from the eye or swaged end). If the tissue is tough it may help to hold the needle closer to the point.
- With the hand holding the needle holders, roll your wrist to advance the needle into the skin and through the tissue. This will help minimise tissue damage caused by trying to force or 'tug' the needle through the tissue.
- Pierce the skin (or silicon pad) approximately 5mm away from the edge with the needle at a right angle (perpendicular) to the incision and pointing towards you.



- The needle should emerge on the other side of the wound in line with the original entry point. There should be an equal distance between sutures.

2E: Tips for learning suturing skills (*continued*)

See image below using a tea towel model to illustrate the result of:

- Good technique (left-hand side - checked pattern is aligned)
- Bad technique (right-hand side) - where the needle was not perpendicular to the incision and, the entry and exit point of the needle were not aligned. This would result in a pucker or hole at the end of the incision (far right), which would impair healing and may allow dirt into the wound with the risk of infection. Additionally, the interval between the sutures on the right-hand side is unequal.



One advantage of using a tea towel with a check-pattern is that it helps to illustrate good & bad technique

Good technique

- The tea towel lines are aligned across the incision
- Sutures are even and consistent
- Sutures are not too close to the incision

Bad technique

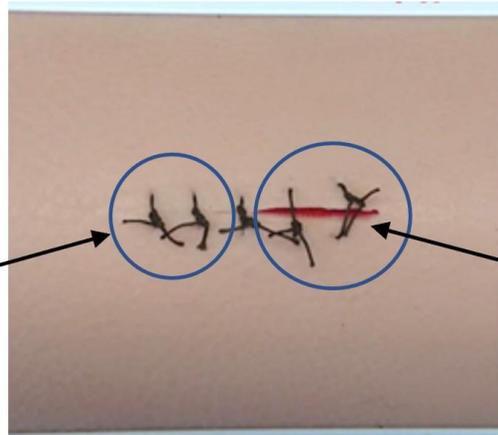
- The tea towel lines are out of line across the incision
- There is a gap at the end of the incision
- Sutures are uneven in length and tension
- Some are too close to the incision

2E: Tips for learning suturing skills (*continued*)

- Sutures must be at an appropriate tension to close the wound and appose the edges correctly.
- Care must be taken to ensure they aren't too tight or too loose. (see images below).



Don't tie sutures too tight. In the living animal, if sutures are too tight this may cause post-operative swelling, redness and discomfort, which can impede wound healing.



These sutures are at the correct tension and the wound edges are apposed.

These sutures are too loose. If sutures are not tight enough (too loose), the wound edges will not appose and the incision will gape which allows dirt or infection into the wound and slows healing.

2E: Tips for learning suturing skills (*continued*)

A few other tips you may wish to think about...

- The serrated edge of instruments i.e. the inside of needle holder jaws, are rough and should not touch or be used to grasp suture material or loosen a knot (except to grasp the short end when tying a knot). The suture will be damaged by the serrated edge and could then breakdown (and come out) prematurely.



Finally:

- When the patient comes for a suture removal or when you are removing sutures from the model, remember to use stitch removal scissors. These have a fine tip and blades specifically designed to facilitate suture removal and are safer and easier to use (and less likely to damage the model).



3. MCQs

Test yourself using the MCQs in this quiz:



https://xerte.bris.ac.uk/play.php?template_id=5084



4. Notes and other useful resources

There are clinical skills instruction booklets relevant to basic surgical skills practicals on the website:

<http://www.bristol.ac.uk/vet-school/research/comparative-clinical/veterinary-education/clinical-skills-booklets/>

Relevant booklets include:

- CSL_SP07 Removing suture material from a cassette or pack
- CSL_S00 Simple Interrupted Suture (tea towel)
- CSL_S01 Simple Interrupted Suture (silicon skin pad)
- CSL_SP06 Suture material selection
- CSL_SP10 Knots and Throws

Other relevant flipped classroom material include:

- Basic surgical skills practical flipped classroom (instrument handling and knot tying)