COVIDIEN

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Endo Stitch™

Suturing Instrument Intracorporeal Knot Tying Manual



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This manual will help you to gain an understanding of basic intracorporeal knot-tying techniques using the Covidien Endo Stitch™ Suturing Instrument. The manual includes instructions for use of the instrument, as well as instructions for loading and following the step-by-step instructions, and with just a little practice, this manual will enable you to master these time-saving techniques within a very short time.

Refer to the package insert for complete product details.

Acknowledgments:

Covidien wishes to acknowledge the contributions of Shelley D. Spray and J. Paul Nolan, ASME, IDSA, SAE for the editorial content of the Endo Stitch™ Suturing Instrument Intracorporeal Knot Tying Manual. In addition, we thank J. Paul Nolan and Cindy Zacks for their illustrations.

INTRODUCTION

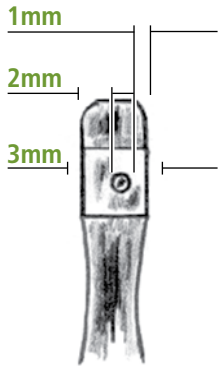
The Covidien Endo Stitch™ suturing instrument is designed to make endoscopic suturing and the tying of intracorporeal knots easy. The Endo Stitch™ suturing device, with its integral needle and suture, will make it possible for you to undertake most endoscopic procedures without the necessity of having to struggle with loose needles and suture. A wide range of available suture materials makes the Endo Stitch™ instrument suitable for use in most endoscopic procedures requiring suturing. All needles and sutures are housed in convenient to use cartridges, ready for instant loading.

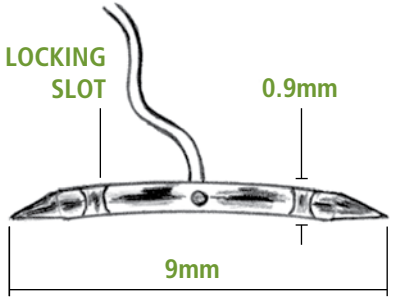
The shaft of the Endo Stitch™ 10mm instrument is 36cm in length to provide enhanced access to the tissue site.

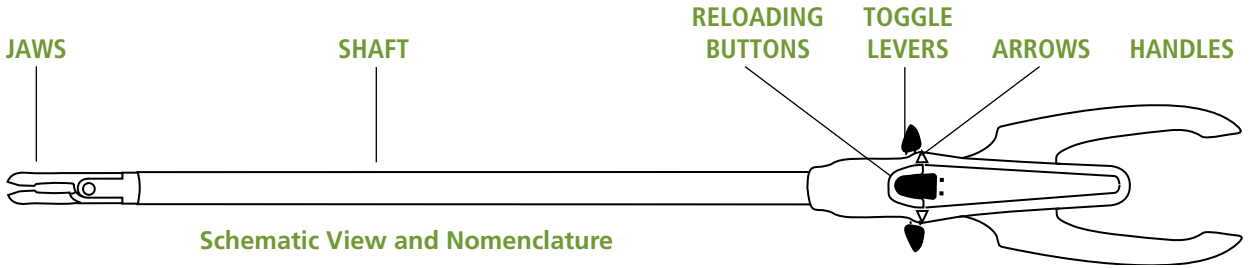
The large 4mm tissue gap, combined with the jaw's ability to compress tissue, allows the Endo Stitch™ instrument to accommodate a wide variety of tissue thicknesses, varying between thin, delicate tissue, to tissue thickness requiring the application of a 4.8mm staple.

The jaws of the Endo Stitch™ instrument are 4mm wide. To further assist in placing the needle as close to the tissue as possible, the needle is offset to one side of the jaws. The needle is closest to the edge of the jaw that is on the side of the instrument bearing the Autosuture logo.

The needle which is used with the Endo Stitch™ instrument is taper pointed on both ends. This double-pointed needle, utilizing taper points, assists in penetrating tissue.





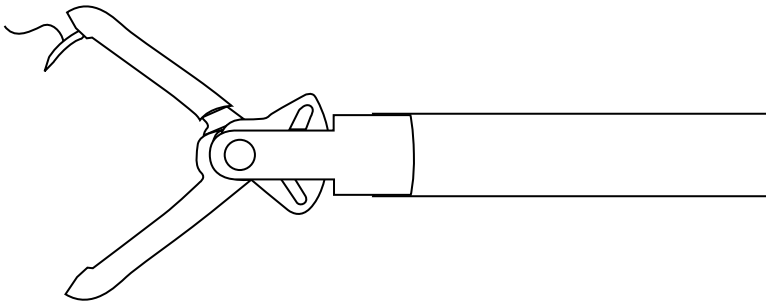


Schematic View and Nomenclature

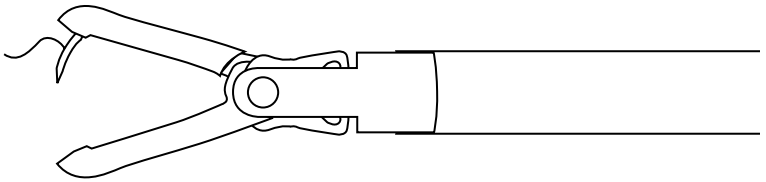
Product Description

The handles of the instrument are designed to fit comfortably into the user's hands.

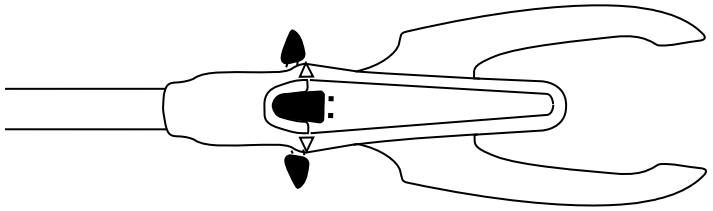
The handle section consists of two toggle levers, two black unloading buttons (one on the front and one on the back) and two handles.



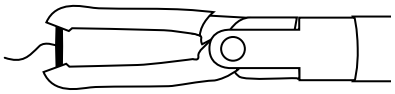
The needle is passed back and forth between the instrument's jaws by completely squeezing the handles and activating either toggle lever forward or backward. (If a suture and needle are not loaded into the instrument, the suture can be loaded into the jaws by following the loading instructions.)



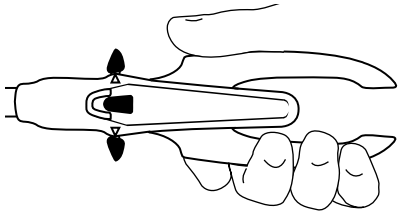
The handles are fully squeezed to close the jaws and are released to open the jaws. Adjust the amount that the jaws are opened by simply varying the amount that the handles are squeezed. This allows for enhanced access to tight operative sites.



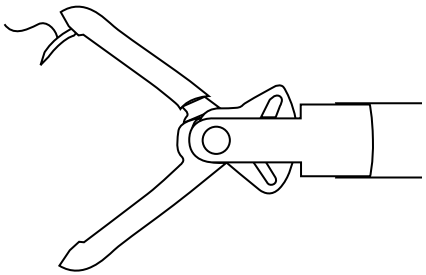
Before inserting the instrument into the trocar, the jaws must be placed in the closed, neutral position. To align the jaws in the neutral position, the handles are completely squeezed, and the toggle levers are aligned with the arrows on the instrument body. The jaws are now ready to be inserted into the trocar. Once the instrument has been inserted through the trocar, the handles are squeezed and either toggle lever is moved completely forward or backward.



The handles are then released and the jaws are opened, exposing the needle. The instrument is now ready to place a stitch.

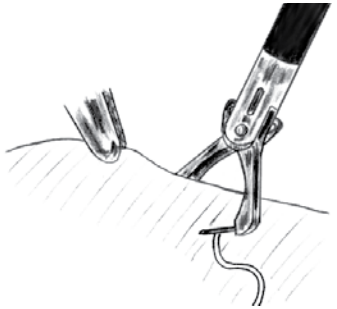


To pass the needle through tissue, the jaws of the Endo Stitch™ instrument must first be placed in the open position (i.e., either toggle lever is activated to the forward position). Note: The needle is always in the jaw on the side which has the toggle lever pushed forward.



The tissue to be sutured is exposed by using an Endo Grasp™ instrument. The jaws of the instrument are placed around the tissue to be sutured.

The handles are completely squeezed to close on the tissue.

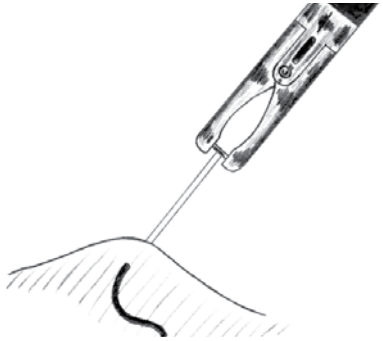


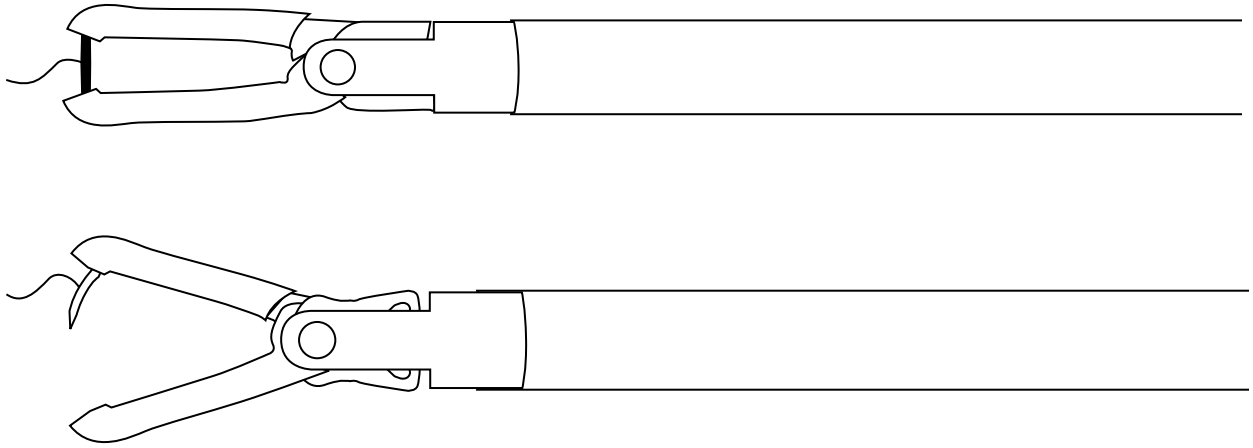
Once the jaws are fully closed, either toggle lever is activated completely forward or backward (depending on their original position) and the needle is passed from one jaw to the other jaw.

As the handles are released, the jaws open, and the needle is gently pulled through the tissue.



Once the needle has been completely pulled through the tissue, the jaws of the instrument should be returned to the closed, neutral position. The closed, neutral position should be used any time that the surgeon is pulling the suture through tissue.





Neutral Position

Open Position

Neutral Position

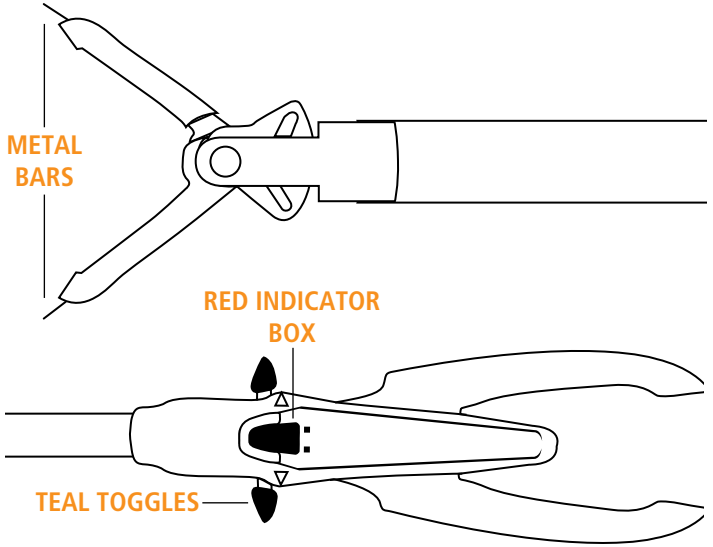
The neutral position provides three important advantages.

- First, it allows the jaws of the instrument to be easily inserted into the trocar.
- Second, it protects both needle tips from inadvertently puncturing tissue.
- Third, the neutral position fully supports the needle. If the jaws are not in the neutral position and you pull on the suture, you may run the risk of having the needle bend. You may also risk pulling the needle out of alignment with the empty hole located on the opposite jaw. If the needle is not properly aligned or the needle is bent, the jaws may not close, and the needle may need to be unloaded and retrieved manually.

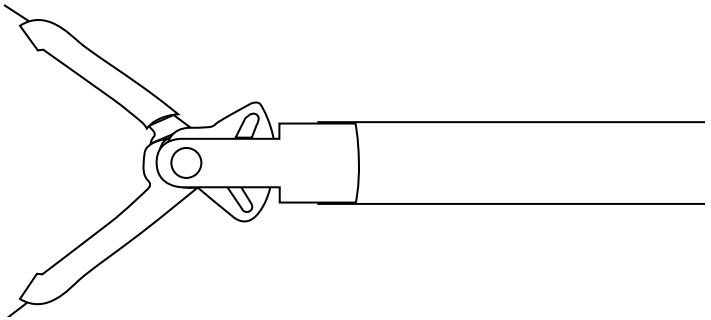
LOADING THE INSTRUMENT

To Load

First ensure that the jaws are in the open position with the metal bars fully extended. The teal toggle levers should be in a forward position and the red indicator boxes should be fully exposed.

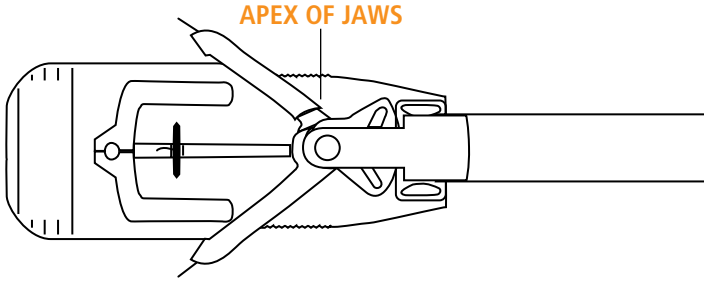


If the instrument is not in the ready to load position (i.e., the metal bars are not exposed), follow the instructions to unload the instrument (even if there is no needle in the jaws) to expose the metal bars.



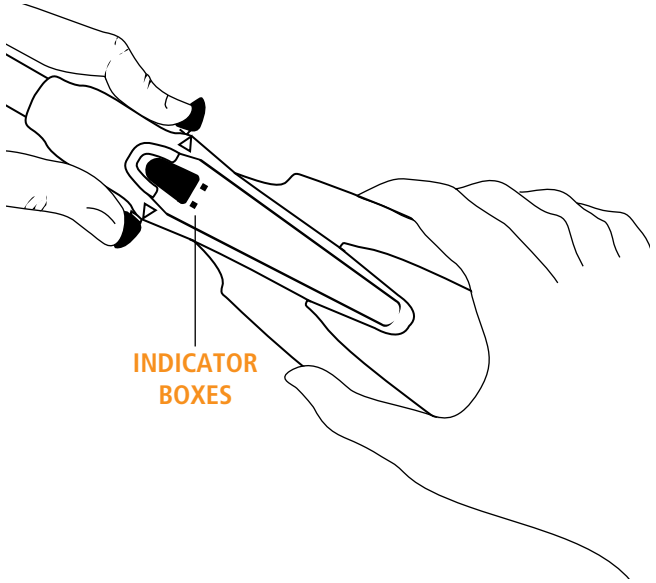
STEP 1

Insert the jaws into the single use loading unit (SULU) with the Autosuture™ logo facing up. Press down at the apex of the jaws to ensure that the jaws are fully seated.



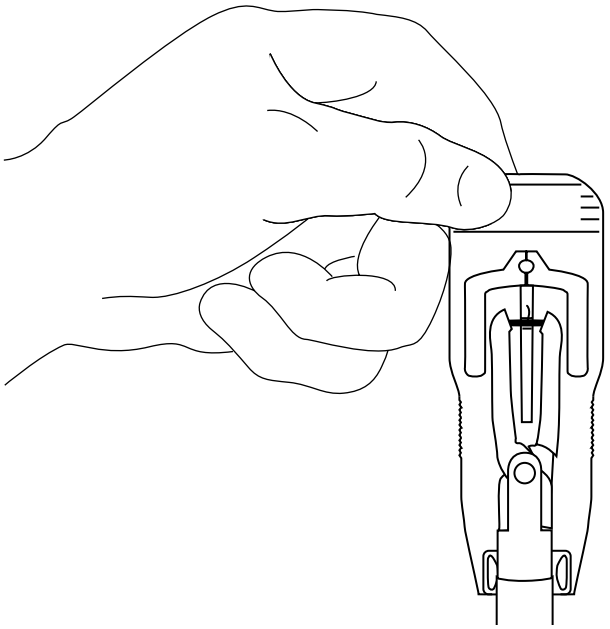
LOADING THE INSTRUMENT *(CONTINUED)*

STEP 2
Completely squeeze the handles together with one hand while using the other hand to pull both toggle levers back from the jaws until an audible click indicates that the needle is properly loaded. Note that the red indicator boxes are covered by the black button.



STEP 3
Gently press down on the tab located at the top of the SULU. The jaws will release from the SULU. Pull the SULU away from the jaws to unreel the suture from the spool. When using longer lengths of suture, ensure that the suture does not fall from the sterile field. Suture SULUs are offered in 7" and 48"; other lengths can be manually cut.

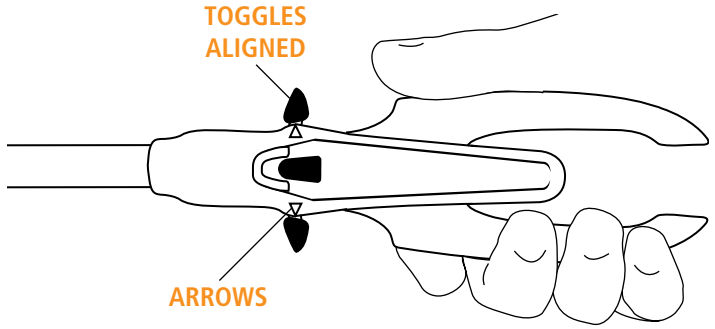
Test to ensure that the needle is fully seated by passing the needle back and forth between the jaws of the instrument. The instrument is now ready for use. (If the needle does not pass smoothly, unload the needle and reload.)



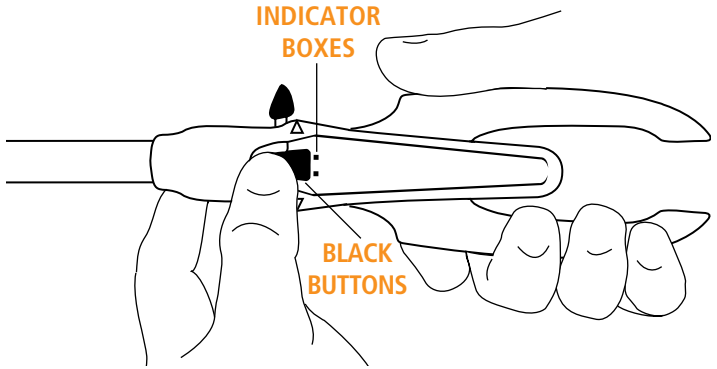
UNLOADING THE INSTRUMENT

To Unload

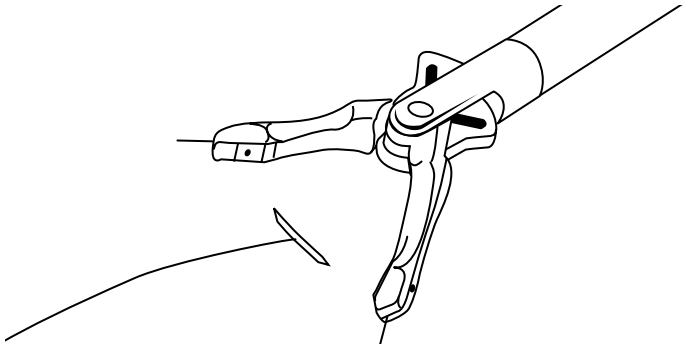
STEP 1
Squeezing the handles together, align the toggle levers with the arrows on the body of the handles.



STEP 2
Keeping the handles squeezed together, simultaneously press the two black reloading buttons which are located on the front and rear of the instrument. Slide the buttons forward, exposing the red indicator boxes marked on the body of the instrument.



STEP 3
Keeping the jaws of the instrument over a suitable needle disposal site, release the handles and remove the needle. The Endo Stitch™ instrument is now ready to be reloaded.



KNOT TYING TECHNIQUES - SQUARE KNOT

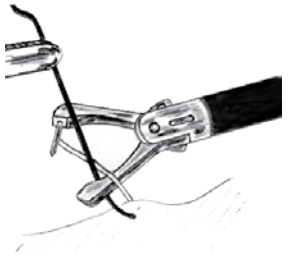
STEP 1
Pass the sutured needle through the tissue.



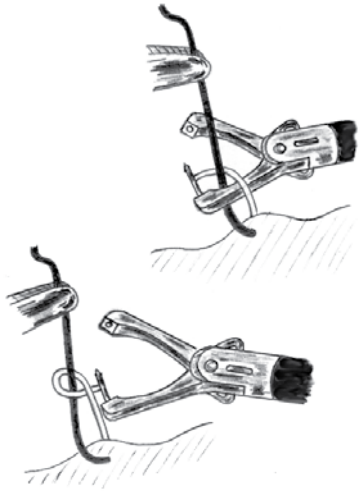
STEP 2
Lay the suture which extends directly from the needle over the top of the empty jaw.



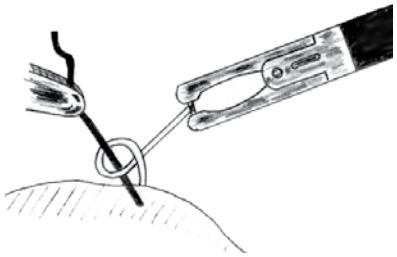
STEP 3
Grasp the suture tail with an Endo Grasp™ instrument. Bring the suture tail in between the jaws of the instrument. Close the jaws and pass the needle.



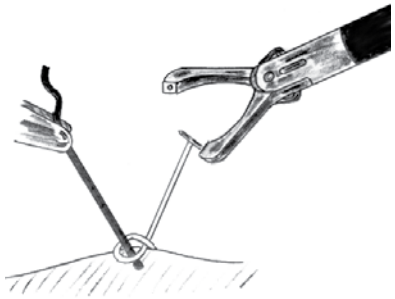
STEP 4A-4B
Pull the jaw with the needle back through the loop of suture.



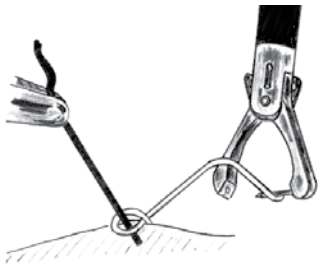
STEP 5
Cinch the knot with the jaws in the closed neutral position.



STEP 6
Return the same toggle lever back into the forward position. The needle should be in the same jaw as in step 4a - 4b (the left jaw).



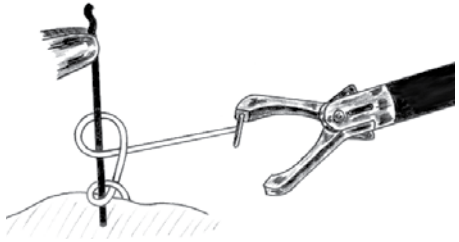
STEP 7
Lay the suture which extends directly from the needle over the top of the empty jaw.



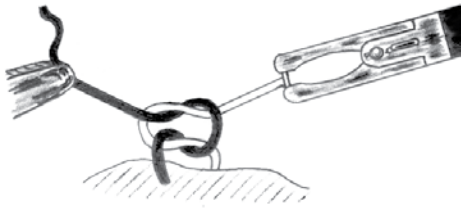
STEP 8
Bring the suture tail in between the jaws of the instrument. Close the jaws and pass the needle.



STEP 9
Pull the jaw with the needle back through the loop of suture.

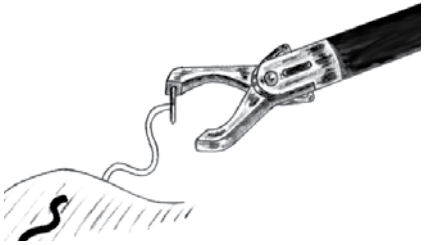


STEP 10
Cinch the knot with the jaws in a closed position. Repeat steps to place additional throws.

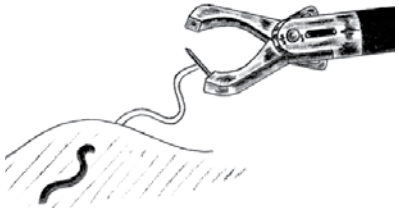


KNOT TYING TECHNIQUES - SURGEON'S SQUARE KNOT

STEP 1
Pass the sutured needle through tissue.



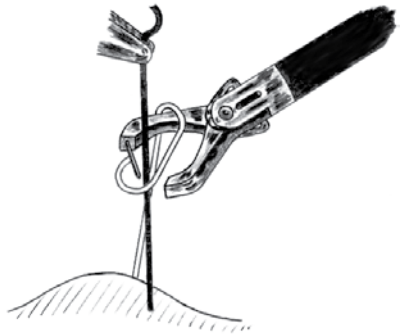
STEP 2
Close the jaws and transfer the needle to the opposite jaw.



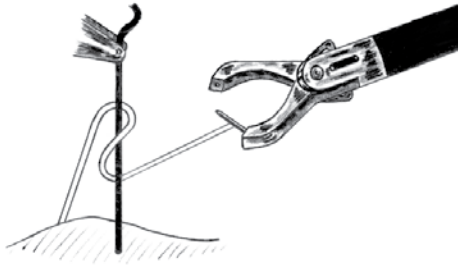
STEP 3
Lay the suture which extends from the needle over the top of the empty jaw.



STEP 4
Bring the suture tail in between the jaws of the device. Close the jaws and pass the needle to the opposite jaw.



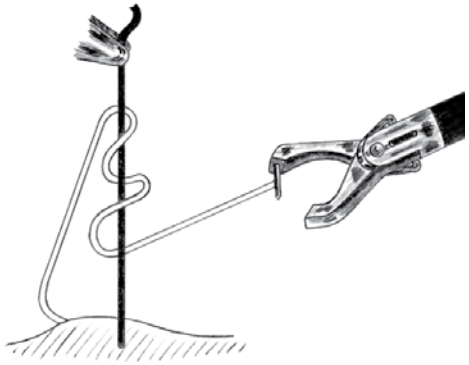
STEP 5
Bring the suture tail in between the jaws of the device. Close the jaws and pass the needle to the opposite jaw.



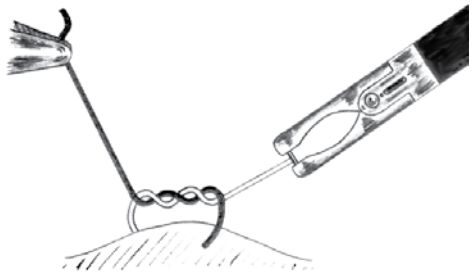
STEP 6
Place the empty jaw in the loop adjacent to the tissue. Close the jaws and pass the needle to the opposite jaw.



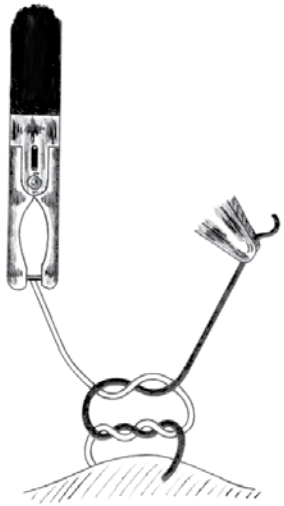
STEP 7
Pull the jaw with the needle back through the loop.



STEP 8
With the jaws in the closed neutral position, cinch the knot tight.



STEP 9
To complete the Surgeon's Knot Square, continue with a single throw of the Square Knot.

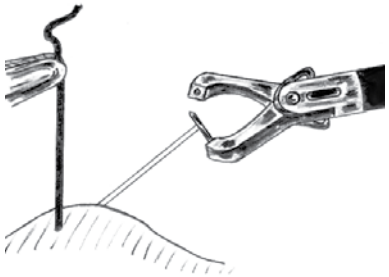


KNOT TYING TECHNIQUES - MODIFIED FISHERMAN'S KNOT

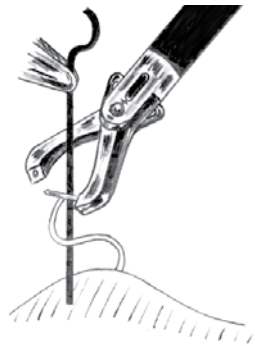
STEP 1
Pass the sutured needle through the tissue.



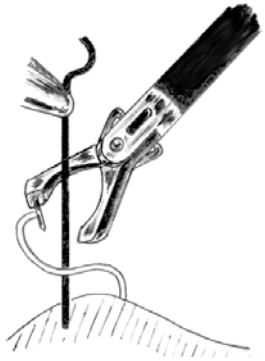
STEP 2
Pick up the tail of suture with the Endo Grasp™ instrument. Pass the needle to opposite jaw.



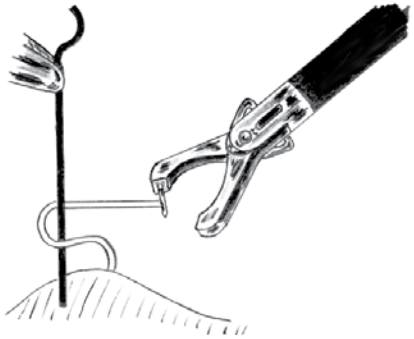
STEP 3
Pull the tail in between the jaws just behind the needle.



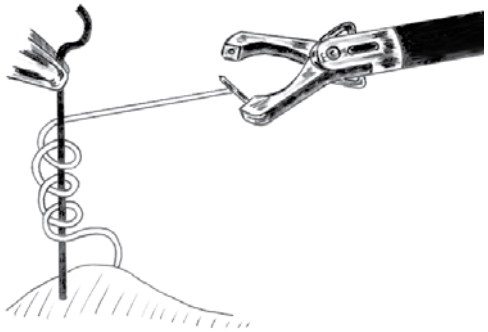
STEP 4
Insert the empty jaw into the loop adjacent to the tissue.



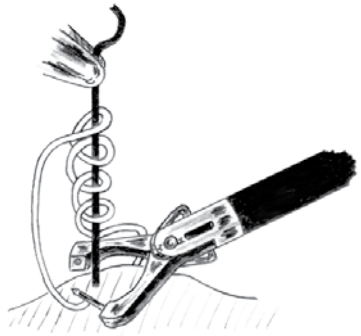
STEP 5
Pass the needle to the opposite jaw.



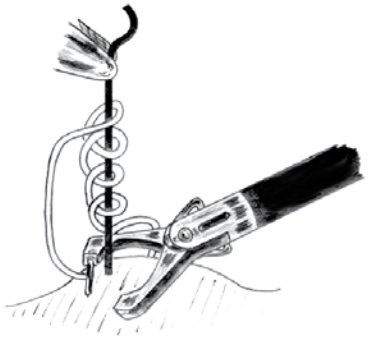
STEP 6
Pull the jaw back out from the loop.



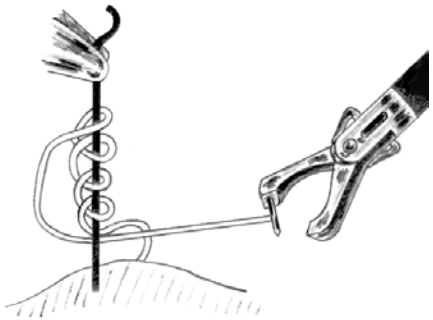
STEP 7
Insert the empty jaw into the loop adjacent to the tissue.



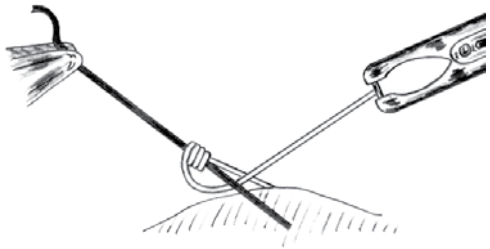
STEP 8
Pass the needle to the opposite jaw.



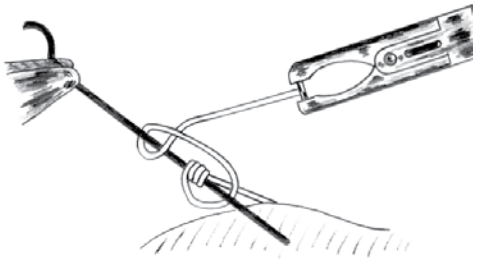
STEP 9
Pull the jaw back out from the loop needle.



STEP 10
Tighten the knot with the jaws closed and the toggle levers in the neutral position.



STEP 11
To secure and tie off this Modified Fisherman's Knot, use a single throw of the Square Knot.

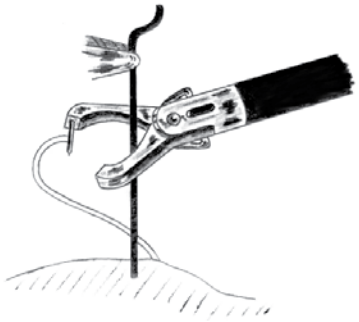


KNOT TYING TECHNIQUES - TAIL SPIN KNOT: ALT. SQUARE KNOT

STEP 1
Pass the sutured needle through the tissue.



STEP 2
Bring the tail in between the jaws.



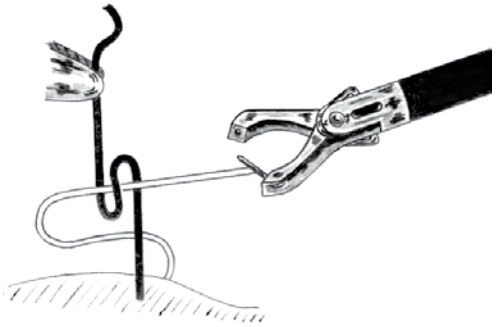
STEP 3
Wrap suture tail once around the empty jaw (jaw without needle).



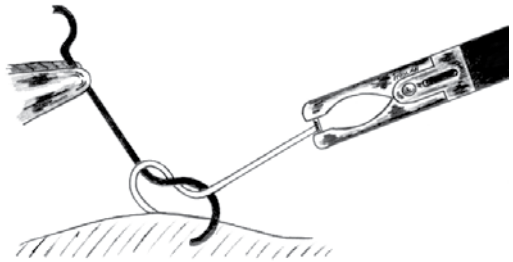
STEP 4
Pass the needle to the opposite jaw.



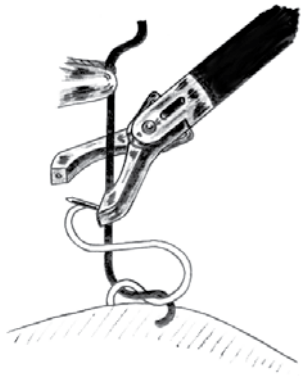
STEP 5
Pull the jaw with the needle out of the tail suture loop.



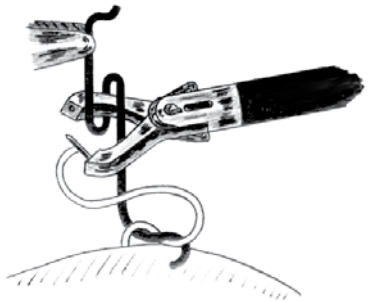
STEP 6
Cinch the knot with the jaws in the closed and neutral position.



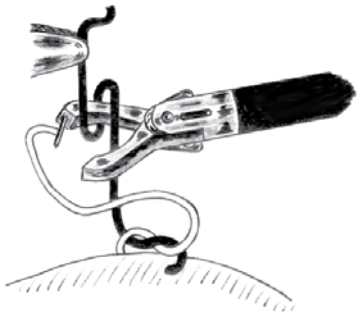
STEP 7
Bring the tail in between the open jaws (needle in the same jaw as in step 5).



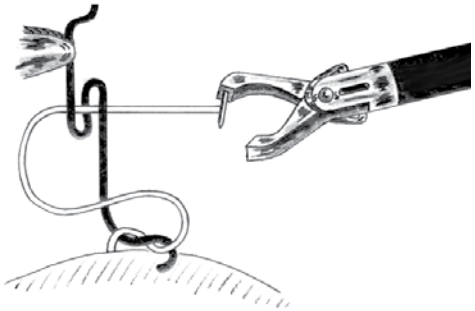
STEP 8
Wrap the suture once around the empty jaw.



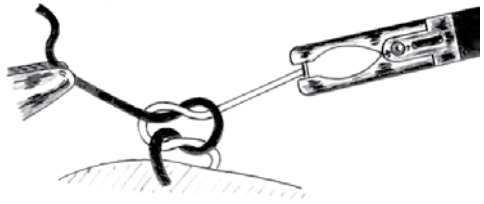
STEP 9
Pass the needle to the opposite jaw.



STEP 10
Pull the jaw with the needle out of the tail suture loop.



STEP 11
Cinch the knot with the jaws closed and in the neutral position.



STEP 12
To create a Surgeon's Knot: At step 3 only, wrap the tail suture around the empty jaw twice instead of once.



KNOT TYING TECHNIQUES - SECURING A RUNNING STITCH

STEP 1
Pass the sutured needle through the tissue. Pull enough suture material through the tissue to ensure there is sufficient material to make the run of stitches, and to tie off the knot at the end of the run.



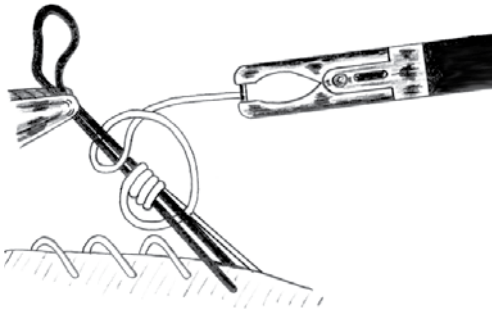
STEP 2
Anchor the starting point by tying a Square Knot (see p. 11). Run the desired length of stitches.



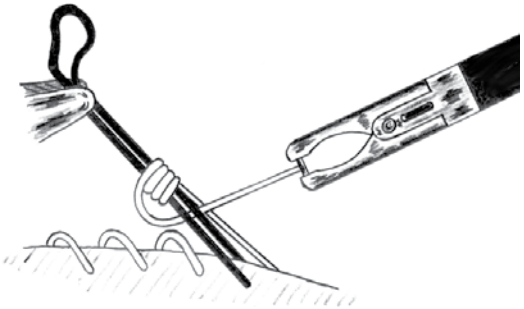
STEP 3
At the end of the running stitch, make the last pass through the tissue close to the penultimate pass. The loop that this last pass forms can be now held up with an Endo Grasp™ instrument to make a tail for tying off the run.



STEP 4
Holding the loop with the Endo Grasp™ instrument, use this as a tail to terminate the run with a Modified Fisherman's Knot (see p. 12).



STEP 5
Tie off the Modified Fisherman's Knot using a single throw of the Square Knot.



ORDER CODES

Endo Stitch™ Single Use Loading Units - Single Stitch

Order Code	Suture Type	Description	Size Usp=	Size Metric	Color	Length
170051	Polysorb™	Ctd, Brd Lactomer™ 9-1	2-0	3	Violet	7" 18cm
170053	Polysorb™	Ctd, Brd Lactomer™ 9-1	2-0	3	Violet	48" 120cm
170050	Polysorb™	Ctd, Brd Lactomer™ 9-1	0	3.5	Violet	7" 18cm
170052	Polysorb™	Ctd, Brd Lactomer™ 9-1	0	3.5	Violet	48" 120cm
170056	Polysorb™	Ctd, Brd Lactomer™ 9-1	0	3.5	Undyed	48" 120cm
170054	Polysorb™	Ctd, Brd Lactomer™ 9-1	0	3.5	Undyed	7" 18cm
170057	Polysorb™	Ctd, Brd Lactomer™ 9-1	2-0	3	Undyed	48" 120cm
170055	Polysorb™	Ctd, Brd Lactomer™ 9-1	2-0	3	Undyed	7" 18cm
170070	Polysorb™	Ctd, Brd Lactomer™ 9-1	3-0	2	Violet	7" 18cm
170071	Polysorb™	Ctd, Brd Lactomer™ 9-1	3-0	2	Violet	48" 120cm
170072	Polysorb™	Ctd, Brd Lactomer™ 9-1	3-0	2	Undyed	7" 18cm
170073	Polysorb™	Ctd, Brd Lactomer™ 9-1	3-0	2	Undyed	48" 120cm
170090	Polysorb™	Ctd, brd Lactomer™ 9-1	4-0	1.5	Violet	48" 120cm
170092	Polysorb™	Ctd, Brd Lactomer™ 9-1	4-0	1.5	Violet	7" 18cm
170094	Polysorb™	Ctd, Brd Lactomer™ 9-1	4-0	1.5	Undyed	7" 18cm
170096	Polysorb™	Ctd, Brd Lactomer™ 9-1	4-0	1.5	Undyed	48" 120cm
170012	Bralon™	Ctd, Brd Nylon	0	3.5	Black	48" 120cm
170010	Bralon™	Ctd, Brd Nylon	0	3.5	Black	7" 18cm
170013	Bralon™	Ctd, Brd Nylon	2-0	3	Black	48" 120cm
170011	Bralon™	Ctd, Brd Nylon	2-0	3	Black	7" 18cm
170003	Sofsilk™	Ctd, Brd Silk	0	3.5	Black	48" 120cm
170001	Sofsilk™	Ctd, Brd Silk	0	3.5	Black	7" 18cm
170004	Sofsilk™	Ctd, Brd Silk	2-0	3	Black	48" 120cm
170002	Sofsilk™	Ctd, Brd Silk	2-0	3	Black	7" 18cm
173026	Surgidac™	Ctd, Brd Polyester	0	3.5	Green	7" 18cm
173024	Surgidac™	Ctd, Brd Polyester	0	3.5	Green	48" 120cm
173021	Surgidac™	Ctd, Brd Polyester	2-0	3	Green	7" 18cm
173023	Surgidac™	Ctd, Brd Polyester	2-0	3	Green	48" 120cm

Endo Stitch™ Suturing Devices

Order Code	Instrument
173027	Endo Stitch™ Short Suitable for Open Surgery
173016	Endo Stitch™ 10mm Suturing Device

Endo Stitch™ Single Use Loading Units - Triple Stitch

Order Code	Suture Type	Description	Size Usp=	Size Metric	Color	Length
170043	Surgidac™	Ctd, Brd Polyester	0	3.5	Green	48" 120cm
170040	Surgidac™	Ctd, Brd Polyester	0	3.5	Green	7" 18cm
170041	Surgidac™	Ctd, Brd Polyester	2-0	3	Green	7" 18cm
170044	Surgidac™	Ctd, Brd Polyester	2-0	3	Green	48" 120cm

PLEASE REFER TO THE PACKAGE INSERT FOR COMPLETE INSTRUCTIONS, INDICATIONS, CONTRADICTIONS, WARNINGS AND PRECAUTIONS



Suturing Device

OTHER SUGGESTED READING

COVIDIEN Knot Tying Manual
Richard R. Edlich, MD, PhD

Laparoscopic Suturing:
A Fast and Easy New Technique
Nelson H. Stringer, MD, Contemporary OB/GYN

Available from your Covidien
Surgical Device Specialist



Triple Stitch SULU



Single Stitch SULU

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