

Six Wound Closure Alternatives For an S-ICD Procedure

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Introduction and Background

An implantable cardioverter defibrillator (ICD) is a life saving device which can reset the heart if it begins beating irregularly or dangerously by shocking it. Normally, the ICD procedure requires putting leads into the heart to shock the patient which can cause complications. The subcutaneous ICD (S-ICD) has gained popularity with patients and physicians since it does not require any component to be placed deeper than just below the skin. The device is placed between the muscles in the side under the armpit and the leads lie over the sternum. Although this advancement is mostly positive, one of the concerns is that the S-ICD procedure takes too much time to perform. The main time constraint is the time needed to close the incisions made on the side to insert the device and the sternum to place the leads. Reducing this time would increase the attractiveness of choosing an S-ICD over an ICD.



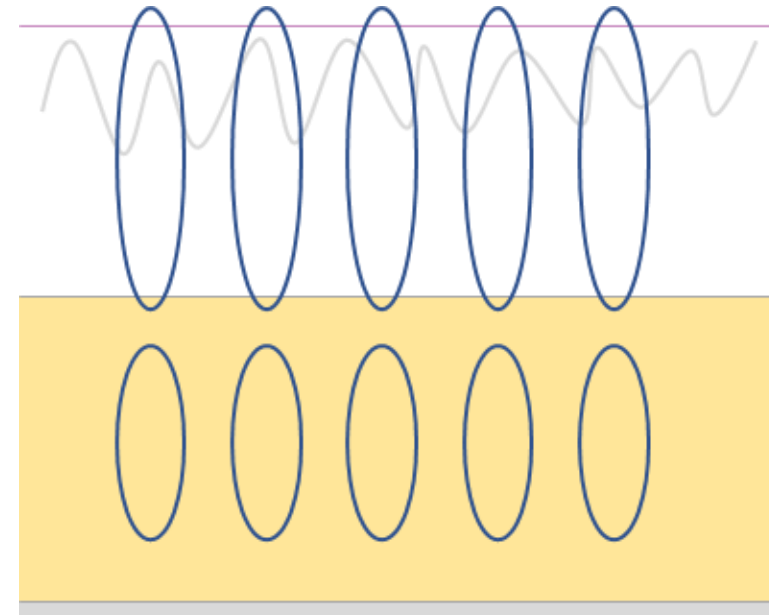
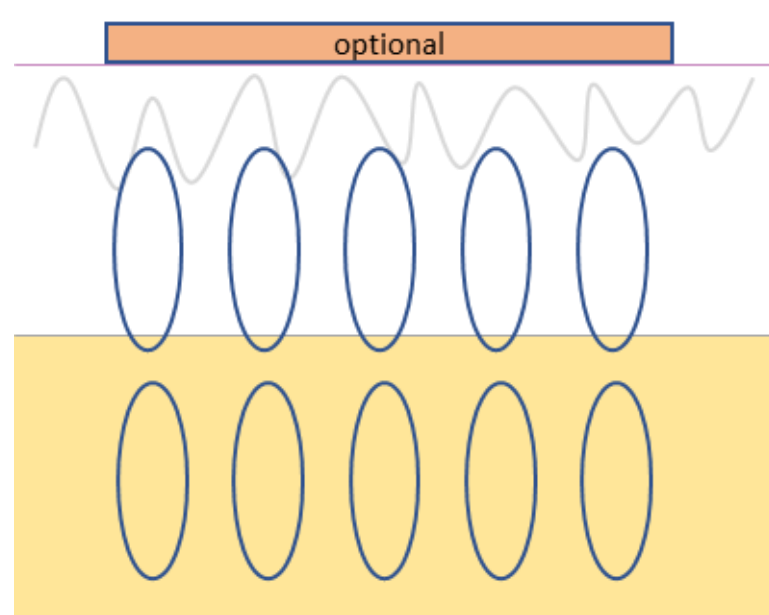
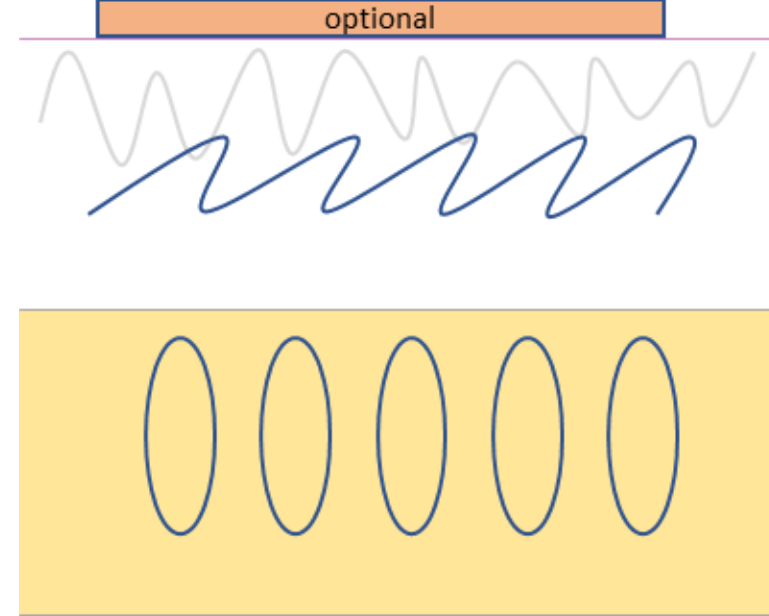
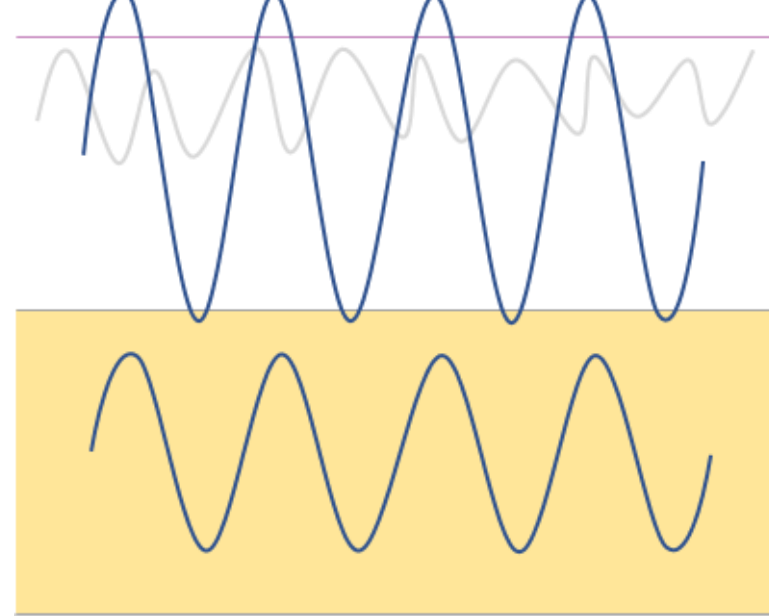
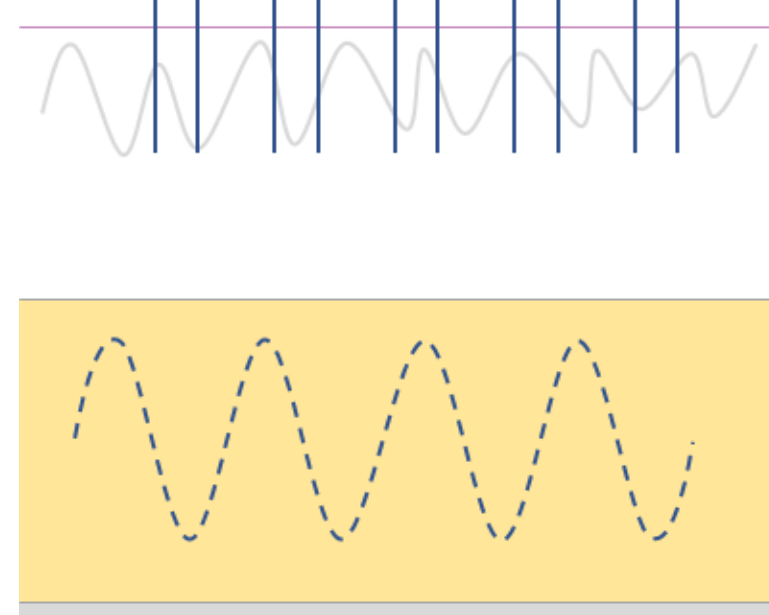
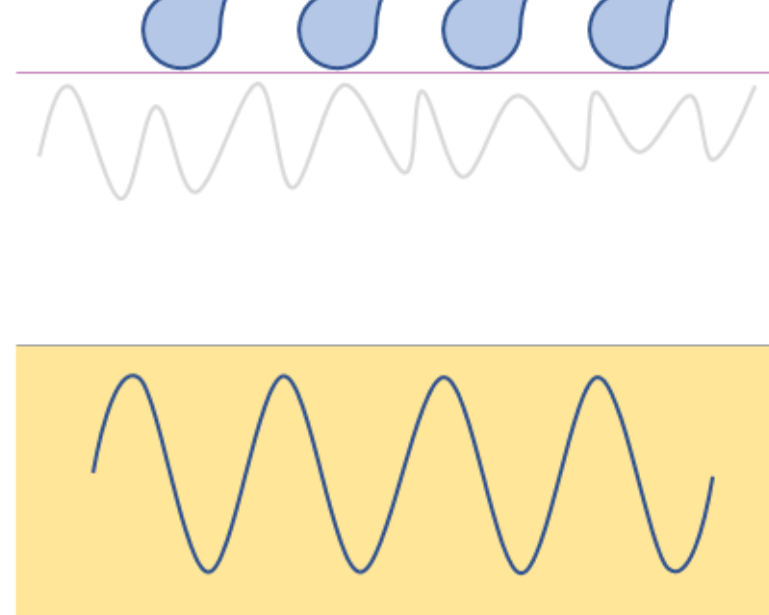
Emblem MRI S-ICD™ with electrodes

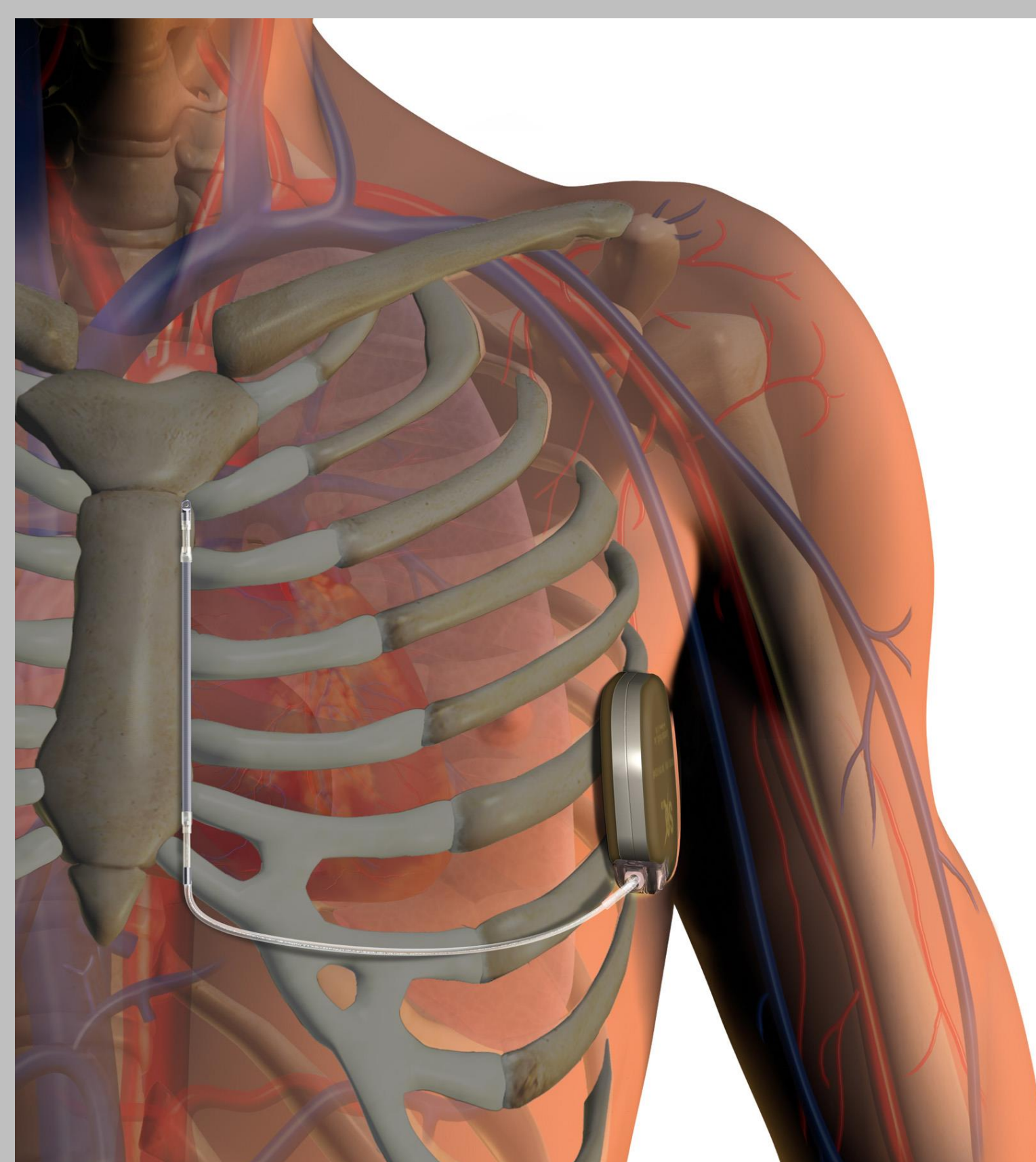
Objective and Method

The object of this research is to present possible wound closure options for the S-ICD procedure that will save time while preserving cost and cosmetics.

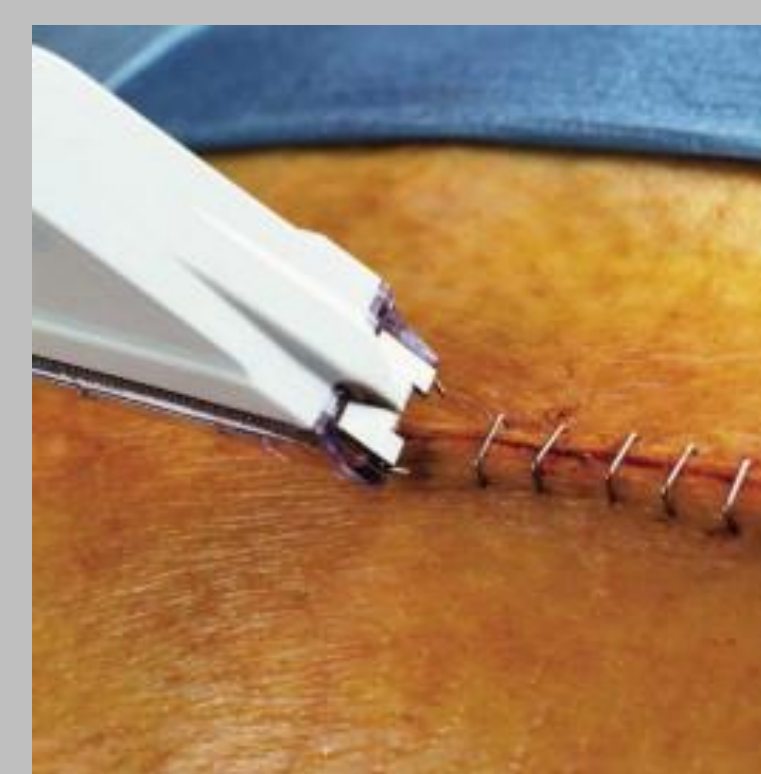
Research was conducted by searching databases and the internet for literature on the S-ICD procedure, wound closure techniques, and comparative studies of multiple wound closure techniques.

Results

 <p>1. Classic (Strongest + Most Familiar)</p>	<p>Classic</p> <ul style="list-style-type: none"> • Simple interrupted sutures for all layers • Strongest and easiest to manipulate during placement • Time consuming • Most familiar to doctors • Uses a lot of material and can cause scarring easily 	 <p>2. Subdermal (Mix Cosmetic + Strong)</p>	<p>Subdermal</p> <ul style="list-style-type: none"> • Deep interrupted sutures and buried interrupted sutures with optional adhesive strips on top • Strong and easy to manipulate during placement • Most time consuming • Less chance of scarring since there is nothing on the surface
 <p>3. Cosmetic (Most Cosmetic)</p>	<p>Cosmetic</p> <ul style="list-style-type: none"> • Deep interrupted sutures and continuous subcuticular suture with optional adhesive strips on top • Subcuticular provides most cosmetic result • Average time and difficulty • Can use barbed sutures for the subcuticular section 	 <p>4. Running (Mix Fast + Familiar)</p>	<p>Running</p> <ul style="list-style-type: none"> • Running sutures for all layers • Provides even tension but not easy to adjust • Faster than interrupted sutures • Very familiar to doctors • Uses less material but can still cause scarring easily
 <p>5. Barbed (Fastest)</p>	<p>Barbed</p> <ul style="list-style-type: none"> • Continuous barbed sutures and skin staples • Fastest method • Similar strength to other methods • Not very adjustable and expensive material • No need to tie knots 	 <p>6. Glue (Fast + Novel)</p>	<p>Glue</p> <ul style="list-style-type: none"> • Deep running sutures and skin glue • Very fast • Weaker • Requires optimal conditions to close well • Most expensive



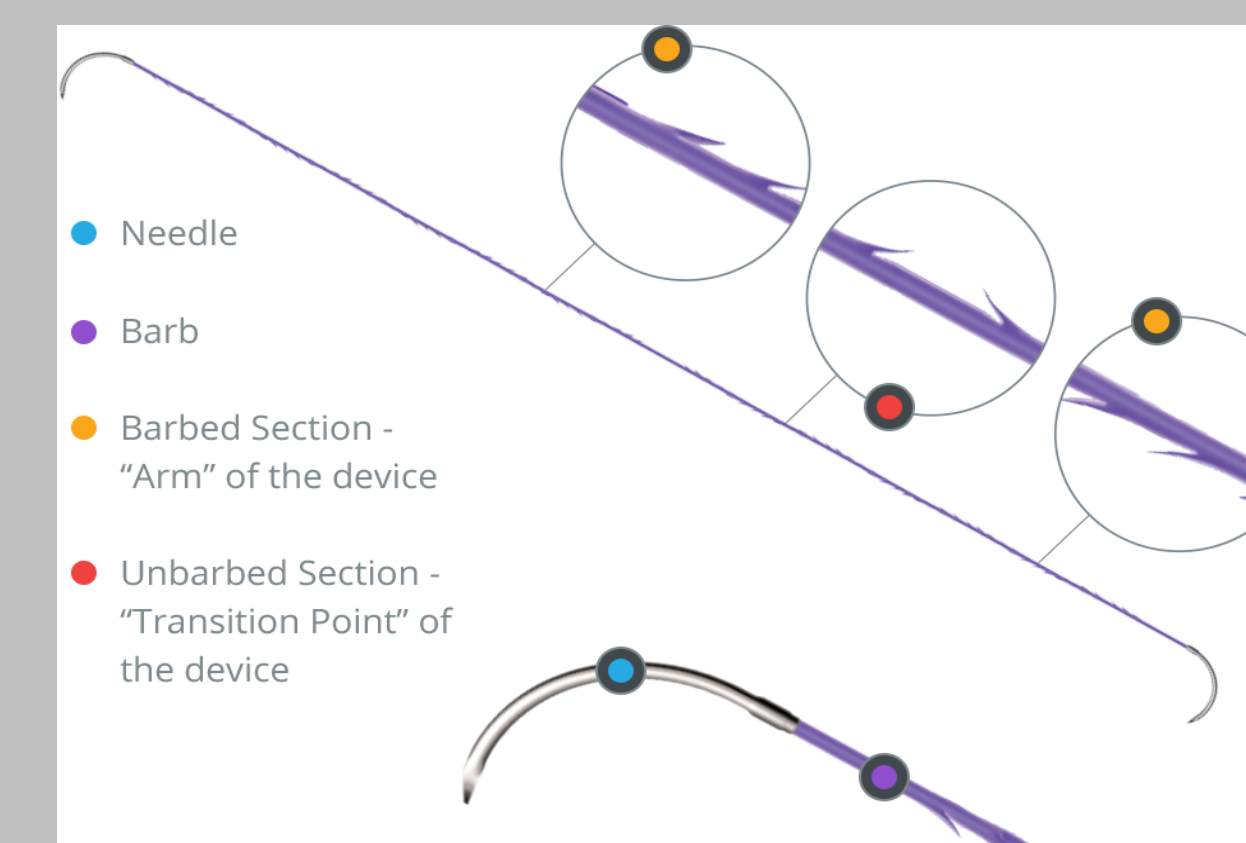
Emblem MRI S-ICD™ with leads shown in the body.



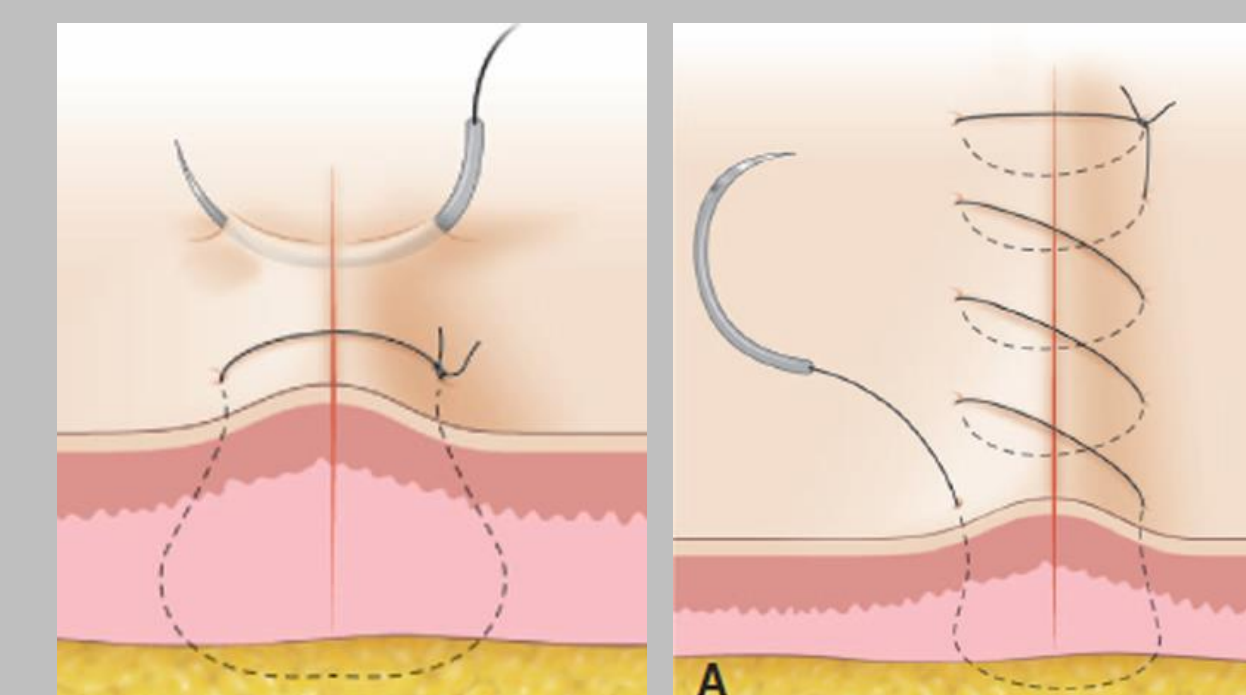
Staples being placed



Diagram of skin glue application



Barbed suture with section labeled



Interrupted and Running sutures

Conclusions

There may not be a single best option for closing the incisions made on every patient who undergoes the S-ICD procedure, but these options should provide ideas of how to make the procedure even more efficient and beneficial.

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