

Free Needle with Jam Cleat

Researchers at the University of South Florida have invented a novel type of free needle that incorporates a jam cleat-type design modification to allow for temporary, stable anchoring of suture to the needle which can be reversed rapidly for suture tying.

Sutures are used in all aspects of surgery including tying off blood vessels, wound closure, and repair of the injured tissue. Suture is commonly manufactured with an attached needle that is used to pass the suture through the tissue to be sewn. Often, surgeons use sutures that are not pre-attached to needles. These sutures, commonly called 'ties' may be used without a needle, in the case of ligating blood vessels, or combined with a needle that has no attached suture, commonly called a 'free' needle.

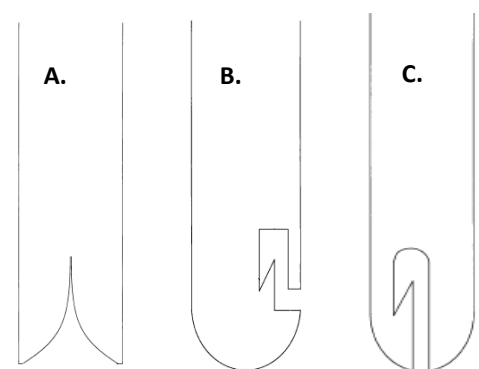
Free needles are manufactured in a variety of sizes and contours. The common feature across all free needles is that the opening (or 'eye') through which the suture passes in order to be engaged in the free needle is generally oval shaped with no mechanism to lock the suture in place, allowing the suture to escape with little force. Alternative designs of eyes have been developed to lock the suture more securely but it requires a significant amount of time to 'load' the suture.

This invention is a modification of free needles to prevent suture escape during suturing that will allow rapid locking and unlocking of the suture within the needle. Our researchers have incorporated a jam cleat in the needle eye or other location on the needle. A jam cleat is usually found on boats and marina decks that allows for the rapid locking and unlocking of ropes for the mooring of the boats. This novel design allows for various modifications to facilitate easier disengagement of the suture from the needle and for easier application and removal of the suture from the needle.

ADVANTAGES:

- **Allows rapid locking and unlocking of suture within the needle**
- **Prevents suture slippage during surgical procedure**
- **Facilitates easier disengagement of the suture from the needle**

Device for Securing a Suture within a Free Needle



Free needle with A. open end jam cleat, B. side opening jam cleat, or C. front facing, end-opening jam cleat

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