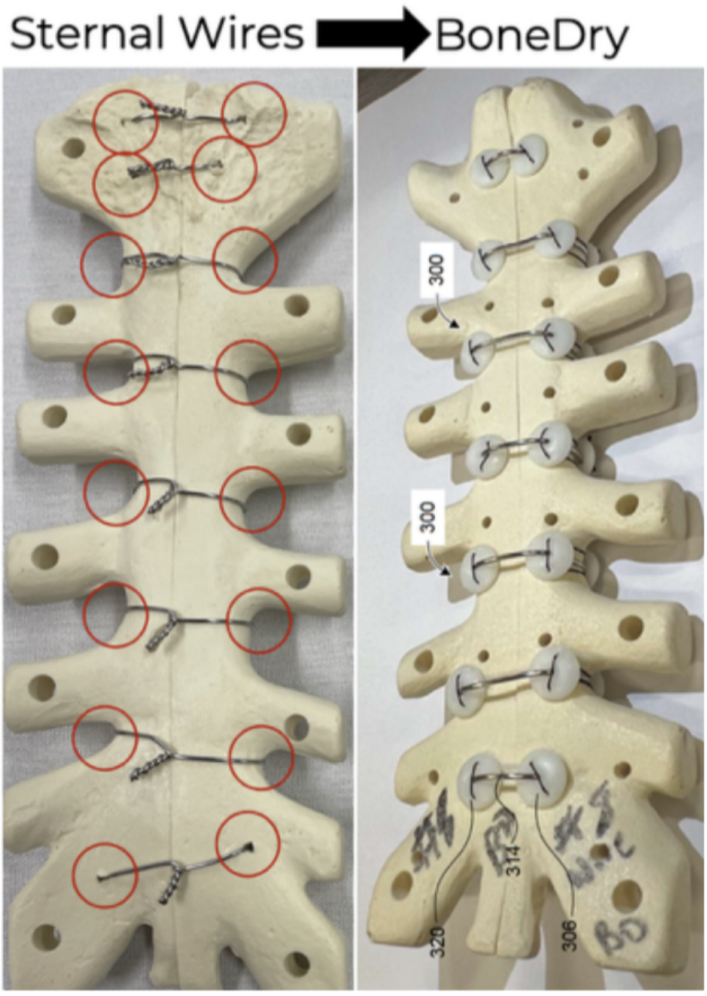
INNOVATION PARTNERSHIPS
UNIVERSITY OF MICHIGAN

BoneDry Sternal Closure Device

TECHNOLOGY NUMBERS: 2020-070, 2023-183

Accelerate Blue Foundry - 2025 (Life Sciences)



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2020-070

Category
Medical Devices
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Accelerate Blue Foundry - 2025/Life Sciences

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OVERVIEW

This improved sternal closure device uses specially designed, integrated polymer grommets paired with a traditional closure wire to stop bleeding and reduce bone erosion more effectively after open heart surgery, offering surgeons a faster, easier, and more reliable way to manage complications that existing wires alone cannot address.

DESCRIPTION

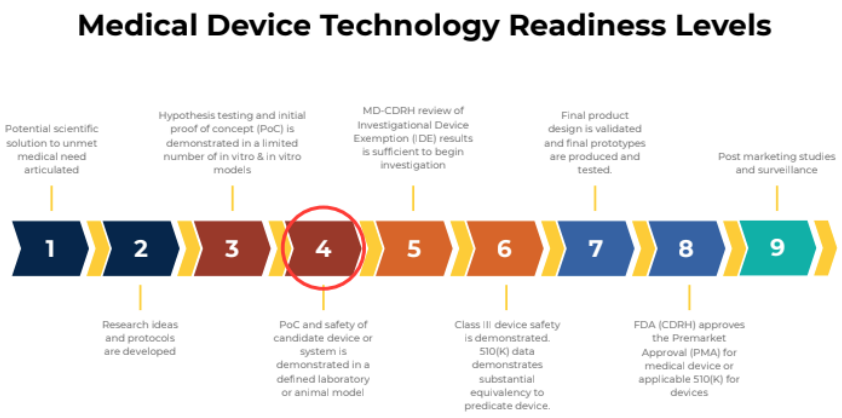
The BoneDry technology combines a standard sternal closure wire with robust, integrated polymer grommets that press firmly but gently against the bone through the needle holes left by the wire. As the wire is tightened, the grommets' unique shape and mechanical features distribute pressure, compress soft tissues to stop bleeding at its source, and ensure the wire

stays in the correct position. New alignment and “snap-in” features make the device easier and quicker to install, while a precisely tapered center hole closely matches the shape of the wire to reduce leaks without getting stuck on bends. BoneDry provides a closure strength over 600% greater than sternal wires, and over 170% greater than sternal plates (the gold standard for high closure strength). Compared to previous designs and current market options, the BoneDry system is not only stronger, but also more user-friendly and better at stopping bleeding—all while remaining compatible with standard surgical procedures. These improvements are expected to decrease rates of sternal dehiscence and deep sternal wound infection, both of which have mortality rates of up to 47% and which can cost as much as $111,175 per patient.

VALUE PROPOSITION

- Novel grommet design boosts strength and resistance to bone erosion, reduces tissue bleeding, and maintains proper orientation for optimal performance.
- Advanced alignment and snap-in features reduce installation time and make knot tying easier for surgeons.
- Enhanced hemostatic sealing at the wire-plug interface minimizes bleeding between the wire and plug without sacrificing ease of use.

TECHNOLOGY READINESS LEVEL



INTELLECTUAL PROPERTY STATUS

This sternal closure system is protected by two utility patent families: WO2021183524A1 and WO2024097354A1.

MARKET OPPORTUNITY

Approximately 700,000 sternotomies are performed yearly in the US, creating a $560M market for this device. Worldwide, that market size is approximately doubled. There is a demonstrated need for devices that reduce post-surgical complications following open heart operations—a challenge that can increase morbidity and mortality, and drive costly re-interventions. This

technology has clear applications in all fields using median sternotomy, especially cardiac and thoracic surgery, with additional opportunity in trauma and transplant settings. Hospitals, surgical centers, and device distributors seeking improved clinical outcomes and workflow efficiency would be early adopters.

- This project has conducted extensive market research through the Coulter Translational Research Partnership Program.