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## Hook, Line, and Sinker: Hook Wire Localization of a Retained Suture Needle in the Perineum

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### Editor:

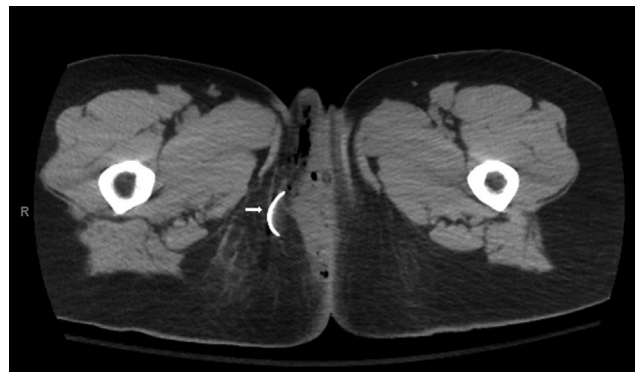
Despite efforts to minimize the incidence of retained surgical instruments, this complication continues to occur in approximately 1 in 8,000–18,000 of all operations (1). Preoperative localization of breast lesions with a hook wire has become a standard radiologic practice (2). This technique is advantageous because the needle is accurately positioned under imaging guidance, and when deployed, the hook maintains the wire in position until the patient can undergo surgical resection of the suspicious lesion. We describe a case of a retained suture needle in the perineum that was successfully localized using a hook wire (Modified Kopans; Cook, Inc, Bloomington, Indiana) and subsequently retrieved.

Institutional review board approval was not required for this single retrospective case report. A 30-year-old woman presented to our institution with pain and purulent discharge from her perineum 6 days following a forceps-assisted vaginal delivery with second-degree perineal laceration. On examination, necrotic tissue was present at the edges of the prior laceration repair site, and purulent material was draining from the wound. She underwent incision, débridement, and packing of the wound, in anticipation of a secondary wound closure.

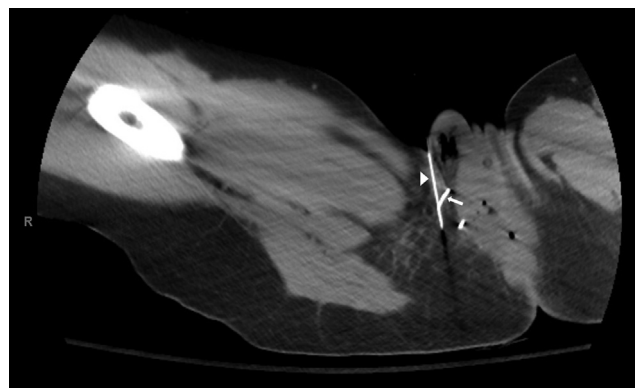
During the secondary wound closure procedure, the tissues were approximated using 3-0 polyglactin 910 (VICRYL RAPIDE; Ethicon, Inc, Somerville, New Jersey) sutures. During performance of the crown stitch portion of wound closure, the tip of the suture needle was visualized in the perineal soft tissues, but it could not to be grasped with pickups or a needle driver. Smooth pickups were used to grasp the suture near the base of the needle. When this area of the suture was grasped, the suture detached from the needle, and the needle remained buried in the perineal soft tissues and

was not visible or palpable. Limited intraoperative ultrasound of the wound and the perineal soft tissues did not localize the needle. Extensive wound exploration and dissection were not performed because of the patient's recent history of perineal abscess.

Hook wire localization was performed using a helical computed tomography (CT) scanner (HiSpeed Advantage; General Electric Medical Systems, Milwaukee, Wisconsin). An initial CT scan through the right perineum was obtained so that the entry skin site, depth, and angulation of the hook wire needle could be planned with respect to the retained suture needle (Fig 1). The length of the hook wire was determined by the depth required to reach the retained suture needle from the skin surface plus an additional 1.5 cm to position the stiff portion of the hook wire adjacent to the retained suture needle. Using serial CT scans to confirm location, the hook wire needle was positioned past the retained suture needle, and the hook wire was deployed; additional CT images confirmed final placement (Fig 2). The portion of the hook wire external to the patient was secured to the patient with gauze and tape. In the operating room, a sharp dissection from the edge of the vaginal wall in the direction of the hook wire was performed, and the retained suture needle was located and retrieved along with the hook wire. The perineum



**Figure 1.** Supine axial CT image demonstrates the retained suture needle in the right perineum (arrow).



**Figure 2.** Supine axial CT image demonstrates the hook wire (arrowhead) adjacent to the retained suture needle (arrow).

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was repaired, and the patient was discharged home 2 days after the procedure.

Surgical retrieval of a retained needle in the perineum assisted by the placement of a hook wire using bip-plane fluoroscopy has also been reported by Kleinpeter et al (3). However, in our experience, CT afforded an acceptable alternative with potentially more accurate localization and superior delineation of adjacent structures.

Exploratory dissection for retained surgical instruments can be a frustrating and challenging endeavor. Hook wire localization can result in direct access for the surgeon without the need for an extensive dissection. CT guidance for localization improves the precision and reliability of the hook wire placement, particularly in deep structures that are not easily visualized with

ultrasound guidance. Our case shows that following hook wire localization, surgical retrieval of a retained surgical instrument can be readily performed through a limited and direct surgical approach. This technique should be considered for the retrieval of similar retained surgical instruments, particularly in deep tissue structures.

## Transjugular Liver Biopsy in a Patient with a Total Artificial Heart

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Although orthotopic cardiac transplantation is the definitive treatment for heart failure, an increasing number of patients are undergoing insertion of an artificial heart for mechanical circulatory support as a bridge to transplantation. Technologic developments have allowed patients with an artificial heart to leave the hospital while they await organ transplant. The devices were approved more recently for destination therapy by the U.S. Food and Drug Administration under a humanitarian use exemption. As this patient population grows, the patients are likely to receive care increasingly outside of institutions performing artificial heart implantation. Knowledge of the anatomic features and complication profile of the device is critical for the safe performance of intravascular interventions, such as transjugular liver biopsy and inferior vena cava filter placement and removal.

Institutional review board approval was granted for this case report, and informed consent was obtained. A 35-year-old man with heart failure secondary to non-ischemic dilated cardiomyopathy was admitted to our

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institution for heart transplant evaluation. The patient was determined to be a poor candidate for transplantation at that time secondary to morbid obesity and poorly controlled diabetes. He was deemed acceptable for mechanical circulatory support as a bridge to transplant and underwent placement of a Total Artificial Heart (SynCardia Systems, Tucson, Arizona). He developed high-volume recurrent ascites with worsening liver function tests 6 months after placement. Consideration for orthotopic heart transplant was contingent on histologic diagnosis of liver disease. Anticoagulation and ascites precluded percutaneous biopsy. Given the need for liver tissue, an interventional radiologist was consulted for transvenous liver biopsy.

With the patient positioned supine, the right internal jugular vein was accessed. A 5-F A-shaped multipurpose catheter (Cook, Inc, Bloomington, Indiana) was directed toward the lateral wall of the superior vena cava and advanced to the right atrium under fluoroscopy. A wire was advanced along the lateral wall of the atrium, past the eustachian valve into the inferior vena cava, avoiding the aperture of the mechanical right ventricle. The right hepatic vein was selectively catheterized. An exchange length stiff guide wire was passed into the hepatic vein, and the multipurpose catheter was exchanged for a long 7-F Dextera hemostatic guide sheath (US Biopsy, Franklin, Indiana) with an internal metal cannula. Once the guide sheath was positioned within the mid-right hepatic vein, biopsy was performed with an 18-gauge Dextera core biopsy needle (US Biopsy).

The Total Artificial Heart consists of two separate ventricular assemblies operated by an external pneumatic driver. Each ventricle has a 70-mL volume that is filled and emptied by a series of dynamic polyurethane diaphragms; an increase in pneumatic pressure from the external driver pushes the diaphragms upward and forces blood out of the ventricle. Four diaphragms are layered in series to provide redundancy in the case of material failure. The device uses two Medtronic Hall tilting disk