



(e.g., dyspnea) may be not only because of a new episode of VTE, but also a “non-acute” VTE form. Consecutively, our efficacy in the ED may be improved.

Conclusion: The prevalence of Post-thrombotic and Post-PTE syndromes has been approximately 50% following DVT or PTE. Their high prevalence suggests that Post-VTE syndromes can be regarded as subacute/chronic forms rather than complications of VTE. Therefore, a suggested approach may be to separate VTE not only in two acute, but also in subacute/chronic forms (such as Post-thrombotic syndrome, Post-PTE syndrome and CTPH). This is so as to complete the classification. Moreover, it will help us to better perceive the nature of the disease. Additionally, this improved but still simple classification, can enhance our awareness of the Post-PTE syndrome, which is currently not adequate nor is it universal. Consequently, such a classification can be useful for pragmatic purposes - to increase the proper taking of, e.g., “not-acute PTE” (post-PTE syndrome and CTPH) in differential diagnosis in the ED.

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Experience with various techniques for fishhook removal in the emergency department

Fishhook injuries are a commonplace occurrence in both sportfishing and commercial fishing in Michigan. Barbed hooks with single or multiple tips and barbs are used for more success, with the barb on the front end of the hook becoming fixed in the fish's mouth. On occasion, the hook may accidentally snag the fisherman and cause hand or bodily injury. Wounds most commonly occur on the upper limbs or head [1,2]. While the external injury often seems minimal, internal injuries can be dangerous, particularly when the barbed hook is lodged near a blood vessel, tendon, or nerve [1]. Patients and their friends or relatives may try to remove the hook which can often cause more damage to the soft tissues, and many are not medically trained and do not provide appropriate wound care [1]. Generally, there are five primary techniques for fishhook removal: retrograde, string-yank, needle cover, barbed-shaft, and advance and cut [3–5]. The type of method employed depends of factors such as the type of hook, location of injury, depth of tissue penetration, and the physician's judgement [3,4] (Table 1). The purpose of this study was to describe the injury location and treatment of fishhook injuries in patients who presented to the emergency department (ED) in West Michigan.

We conducted a retrospective cohort analysis of patients presenting to the EDs of seven affiliated hospitals in West Michigan with a diagnosis of fishhook injury. All eligible cases were seen between January 2005 and July 2017 (150 months). Patient demographics, location of injury, treatment in the ED, and final disposition were recorded using standardized abstraction forms. Descriptive statistics (mean, SD) and frequency tables were used to describe the key quantitative and qualitative variables.

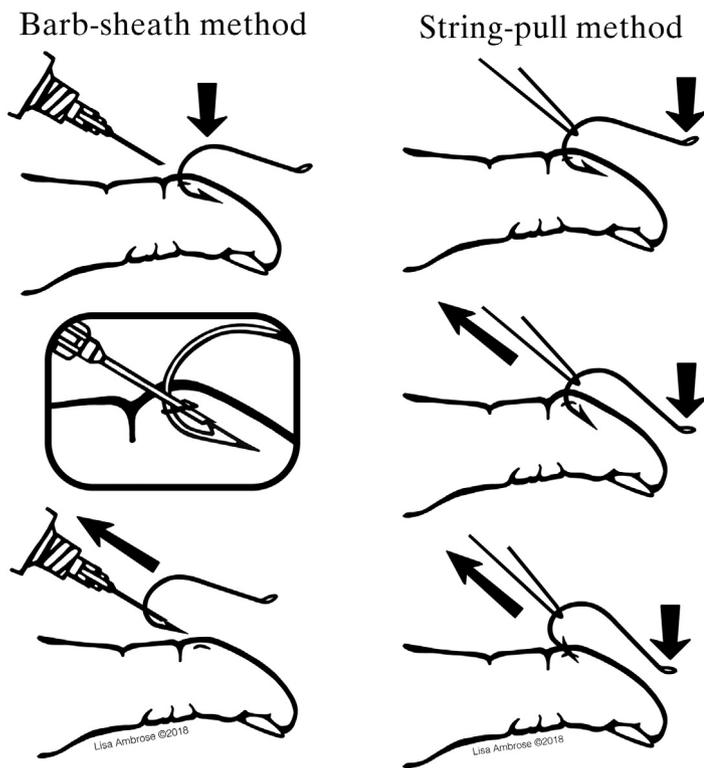
During the study period, 130 patients presented to the ED with an imbedded fishhook. The average age was 27.1 ± 22.3 years; age range 16 months to 71 years. The majority of patients were male (81%). Fishhooks were often barbless hooks, or had a number of barbs, ranging from a single barbed hook to a treble hook with 3 separate barbed hooks. Common locations for injury included the scalp (35%), cheek (22%), finger (19%), and ear (9%). Typically, the injury occurred on the right side of the body (63%). Fishhooks that were not deeply imbedded in the subcutaneous tissue were removed by the retrograde method (16%), gentle manipulation (8%), or cutting the hook out of the skin by making a small incision (7%). Fishhooks that were more deeply imbedded were removed using the barb-sheath method (7%), advance-and-cut method (32%), string-pull technique (22%), or the barbed-shaft hook removal process (8%). Fifteen patients (11%) required more than one technique to remove the fishhook. Overall, 71% of patients required local anesthesia or digital block (4%); two children required conscious sedation. Nineteen patients (15%) were discharged on prophylactic antibiotics.

Results of this study suggest that most fishhook injuries involve the head or neck. Local anesthetics and simple removal techniques are adequate for nearly all injuries. With injuries that are superficial, the retrograde and string-yank methods should be the initial methods of choice as these methods inflict minimal amounts of additional trauma [4]. However, with deeper tissue infiltration, or hooks with barbed shafts, these methods may prove impossible to complete. An advantage of using the barbed-shaft removal and advance and cut techniques for deeper injuries is that they are nearly always successful even though they may inflict more trauma [4]. The methods employed in this study are not intensive and do not require tools which are not generally readily available in the ED. Choosing which technique to use depends on the type of fishhook, the location and depth at which the hook has become embedded in the patient's skin, and the treating physician's judgement. Prophylactic antibiotics may be warranted for patients suffering from deeper wounds which may involve tendons, cartilage or bone [4]. To lessen the chance of serious fishhook injuries, the use of barb guards during storage or non-barbed hooks are alternatives one can utilize.

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Table 1
Fishhook removal techniques [3,5]

Retrograde method	Downward pressure is applied to the shank, allowing an attempt for removal along the original path of entry.
Cutting the hook out with a small incision	An incision is created along the shank until the scalpel reaches the barb, allowing for removal along the created incision.
Barb-sheath method	A needle tip (18-gauge generally provides adequate size) is inserted toward the embedded barb, covering it while the hook is removed along the original path of entry (see illustration).
Advance-and-cut method	The tip of the hook is advanced through the skin allowing for the barb to be cut off, thereby permitting the now barbless shank to be removed along the original path of entry.
String-pull method	String is tied around the shank of the hook, and downward pressure applied to the shank while the string is pulled parallel to the shank, allowing for removal along the original path of entry (see illustration).
Barbed-shaft method	The tip of the hook is partly advanced through the skin and the shank is cut off at the level of the skin to remove excess material before the hook is completely advanced and exits the skin.



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