

# Best Way to Remove a Subungual Tumor




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## KEYWORDS

• Nail surgery • Subungual tumor • Surgical techniques • Surgical pearls

## KEY POINTS

- The techniques for basic removal of subungual tumors can be mastered by dermatologists with a good understanding of the anatomy of the nail unit.
- It is important to keep in mind the goal of the procedure and the desired outcome given the clinical context of the subungual tumor.
- A good medical history should be obtained to assess for factors that can increase the risk of complications, and a thorough examination including imaging is usually indicated to evaluate the extent the tumor.
- Complete nail plate avulsion is rarely indicated for the removal of subungual tumors, and numerous less morbid partial avulsion techniques have been described in the literature.
- The more common adverse outcomes are generally mild and well accepted by the patient, while serious complications are rare.

 A video of a submarine hatch nail biopsy accompanies this article at <http://www.derm.theclinics.com/>

## INTRODUCTION

Subungual tumors encompass a multitude of benign and malignant entities that originate from the nail matrix or the nail bed. Although these tumors are relatively uncommon in the general population, they are often brought to the attention of a dermatologist for diagnosis and treatment. These patients usually present due to dissatisfaction with the appearance of a visible nail abnormality or due to symptoms such as pain, tenderness, or discomfort.<sup>1</sup> Many dermatologists, however, are not comfortable with diagnosing and/or treating such patients due to lack of training. A survey of third-year dermatology residents demonstrated that only 10% had performed more than 10 nail

procedures, and up to 30% had not performed any at all.<sup>2</sup> Nevertheless, the techniques for performing nail surgery are not too different from standard dermatologic surgery. With a good understanding of the unique anatomy of the nail unit and enough experience, nail surgery techniques can be mastered, and these procedures can be performed comfortably and safely in an outpatient dermatology clinic.

## TREATMENT GOALS AND PLANNED OUTCOMES

When planning a surgical procedure to remove a subungual tumor, it is imperative to keep in mind the goal of the procedure and the desired

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outcome. One must consider individual factors for each case in order to decide on the appropriate technique. Although some subungual tumors have pathognomonic clinical features or characteristic symptomatology, a definitive diagnosis can sometimes only be rendered with adequate histopathological evaluation. In many instances, particularly when differentiating between benign and malignant entities, an accurate diagnosis will greatly alter the patient's prognosis and subsequent management. In these cases, the goal of the procedure will be to sample the entire tumor or at least a substantial representative portion in order to obtain a definitive diagnosis. When a benign subungual tumor can be diagnosed clinically with relative certainty, as in the case of a glomus tumor or an onychomatricoma, then the removal of this tumor can be planned with the aim of restoring functionality, mitigating unacceptable symptoms, or achieving improved cosmesis. Lastly, complete removal with clear margins should be the goal when a malignant diagnosis of a subungual tumor has been confirmed, and the appropriate techniques should be utilized to maximize the chance for cure and minimize the rate of recurrence.

### PREOPERATIVE PLANNING AND PREPARATION

In planning the procedure, a proper medical history should be obtained in order to assess for possible risk factors that can increase chances of complications. Some of these risk factors include a history of smoking, diabetes, peripheral vascular disease, Raynaud phenomenon, immunocompromised states, and the use of antiplatelet or anticoagulation therapy. Imaging of the affected digit should be obtained to evaluate the extent or localization of the tumor. Plain film radiography can be helpful in evaluating tumor involvement or invasion into the bone, while MRI can also help identify the exact location of a tumor and its relationship to surrounding structures.<sup>3</sup> In the case of malignant tumors, clinical examination of regional lymph nodes should be completed, as the presence of lymphadenopathy should trigger further work-up for lymphatic spread of the tumor.

Prior to the procedure, the affected extremity should be examined for any signs of infection or compromised perfusion. The patient should also be assessed to determine if prophylactic antibiotics are warranted.<sup>4</sup> The goals of the planned procedure and expected outcomes should be discussed with the patient; additionally, the risks and benefits should be explained in detail, and a signed written consent form should be obtained.

### PATIENT POSITIONING

Patients should be sitting or lying comfortably. The particular extremity should be positioned in a comfortable and neutral position, while allowing the hand or foot to be placed flat on a firm surface with the dorsal aspect exposed. It is important to ensure that the positioning is also comfortable for the surgeon.

### BEST WAY TO REMOVE A SUBUNGUAL TUMOR

There are many approaches to removing a subungual tumor; however, all methods share in common some basic, yet crucial preparatory steps. An essential requirement of any nail procedure is to ensure adequate anesthesia given the highly sensitive area. Anesthetic techniques for nail procedures are discussed in detail separately in this publication. It is advised that the patient copiously scrub the affected hand or foot with soap and warm water prior to the procedure in order to remove potential contaminants. The area is then prepared and draped in sterile fashion. Generally, chlorhexidine is preferred as a surgical preparation over providone-iodine solution.<sup>5,6</sup> For procedures on the hand, a sterile glove can be worn by the patient with a small hole cut on the distal end of the corresponding finger. This technique further establishes a sterile surgical field, and provides an effective tourniquet if the glove finger is rolled back to snugly fit on the proximal portion of the finger.<sup>5-8</sup> When surgery is performed on the toenails, a sterile penrose drain can be used as a tourniquet to obtain a bloodless field. Although not widely used, commercially available T-ring digital tourniquets are relatively inexpensive and have been shown to provide reliable hemostasis at lower overall pressures than other techniques.<sup>9,10</sup> Regardless of the chosen method, it is crucial to release the tourniquet every 20 to 30 minutes to avoid tissue ischemia caused by prolonged hypoxia. The use of sterile versus nonsterile gloves for the surgeon and assistants is a debated issue in dermatologic surgery, with a recent study demonstrating no difference in rate of infection for resection and reconstruction in Mohs micrographic surgery.<sup>11</sup>

Variations in the surgical techniques for removal of a subungual tumor arise from different methods to complete two main steps of the procedure: (1) visualizing or accessing the tumor in the nail bed or nail matrix and (2) extirpating the tumor itself. Although preference and experience of the surgeon play important roles, tumor location and the objective of the procedure are the main determining factors in choosing a technique.

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