



Endoscopic Olecranon Bursectomy in the Treatment of Recalcitrant Olecranon Bursitis: Patient Selection and Operative Technique

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Abstract: Olecranon bursitis is the most common form of bursitis. While it can commonly be treated using noninvasive measures, a surgical approach is indicated for cases of recalcitrant olecranon bursitis, which fail such treatment options. Traditionally, recalcitrant olecranon bursitis has been treated with an open bursectomy. Recently, arthroscopy has been proposed as an alternative method. Contraindications for this approach are cases where the bursa is massively enlarged and contains copious amounts of gouty tophi. While a unanimous consensus regarding which surgical approach is optimal has yet to be made, the endoscopic approach could potentially reduce issues inherent to open bursectomies such as improper wound healing and recurrence. This would reduce patient discomfort and allow them to return to activity sooner. We present a technique for treating recalcitrant olecranon bursitis using endoscopic resection.

Olecranon bursitis refers to the swelling of the bursal cavity over the olecranon process resulting from an atypical increase in fluid volume. Due to its superficial position and limited vasculature, the olecranon bursa is especially prone to damage. Mechanical bursitis occurs in patients who develop this condition through physical stresses from work, sports, and other activities. It is the most common way of developing olecranon bursitis. Other common causes include septic bursitis and tophaceous gout.¹ While conservative treatment methods are generally preferred over surgical methods,¹ it is commonly recognized that cases of recalcitrant olecranon bursitis require surgical intervention. However, a unanimous consensus has yet to be reached on the optimal surgical method. For many

surgeons, an open olecranon bursectomy remains the method of choice. Problems with this approach include wound-healing problems and recurrence.² A potential source of these complications involves the excision via incision made directly above the bursa in this procedure. This area possesses a limited blood supply and is a common site for cellulitis. These factors make the procedure more likely to result in complications, which cause return visits to the operating room.³ The nature of this surgical wound and its healing time can also be a nuisance for patients. These problems inherent in the open bursectomy have led to an exploration of endoscopic excision as a treatment option, which has had promising results in other anatomic locations such as the prepatellar bursa.⁴ This article seeks to describe a technical approach for endoscopic olecranon bursectomies.

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The authors report no conflicts of interest in the authorship and publication of this article. Full ICMJE author disclosure forms are available for this article online, as [supplementary material](#).

Received May 11, 2023; accepted September 3, 2023.

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2212-6287/23672

<https://doi.org/10.1016/j.eats.2023.09.004>

Surgical Technique

Clinical Assessment

Indications for an endoscopic olecranon bursectomy are patients with recalcitrant olecranon bursitis unresponsive to previous attempts at conservative treatment consisting of aspirations, antibiotics, compression, and anti-inflammatory agents. Septic cases are diagnosed clinically based on erythema, fluctuance, and positive aspiration. Infectious markers on laboratory results can also aid in diagnosis. Surgical treatment is more urgent in septic cases if there is not a relatively rapid response

to antibiotics. Open bursectomy is preferred over an endoscopic approach when the bursa is massively enlarged and contains copious amounts of gouty tophi. This is due to the increased risk of rupture as well as the increased chance of recurrence from failure to remove all the tophi.

Patient Positioning and Preparation

The patient is placed in the lateral position with an axillary roll in place (Fig 1). All prominences are well padded using a beanbag and an elbow post. A tourniquet is placed on the upper extremity of the operative arm and inflated to approximately 100 mm Hg over the patient's systolic blood pressure. The patient is then prepped and draped in the normal standard manner.

Endoscopic Portals and Debridement

One superior incision is marked 2 fingerbreadths proximal to the olecranon horizontally. One inferior incision is marked 2 fingerbreadths distal to the olecranon, adjacent to the ulna. The inferior incision is deviated radially to the bursa in line with Langer lines (Fig 2). Each incision is 1 cm. The operative extremity is exsanguinated, although the bursa will be avoided to aid in endoscopic bursal entry. The tourniquet is then inflated, and the incisions are made to be used as portals. Blunt dissection and tunneling deep to the adipose tissue is performed to create endoscopic portals to the bursa (Fig 3). The surgeon then enters the superior portal with the endoscope and the inferior portal with a small shaver (Fig 4). Using the sucker shaver, the bursa is thoroughly debrided along with any loose bodies or unhealthy tissue (Fig 5). Extra precautions are taken to not remove the surrounding soft tissues. Since it can be difficult to remove the complete bursa, the focus should be on removing the bursa as safely as possible as opposed to in its entirety. The blades of the shaver are ensured to always be pointed away from the skin. It is important to have an assistant visually evaluating the skin to alert the surgeon about any risk to its integrity.



Fig 1. Patient positioned in left lateral decubitus position and draped for operation on left arm. Left arm prominences are padded with bean bag and elbow post.



Fig 2. Left operative extremity with incisions sites marked. With the patient in the left lateral position and an axillary roll in place, the superior incision (a) is marked 2 fingerbreadths proximal to the olecranon horizontally. The inferior incision (b) is marked 2 fingerbreadths distal to the olecranon and adjacent to the ulna. This incision is deviated radially to the bursa in line with Langer lines. Each incision is 1 cm.

After debridement of the inferior portal is complete, the surgeon creates a proximal pathway for drainage into the subcutaneous tissues to aid in the healing process by debriding the underlying soft tissue from the bursa at the entrance of the portal site. The portals are then switched (Fig 6). Debridement is resumed from the superior portal utilizing the same precautions used in the inferior portal; any loose bodies may be removed en bloc with endoscopic graspers. Upon completion, final pictures are taken. Instruments are removed and portal



Fig 3. Blunt dissection of the left arm superior olecranon bursal portal (a) using Kelly forceps with the patient in left lateral decubitus position. Dissection is performed deep to the adipose tissue to assist in the creation of endoscopic portals to the bursa at both the superior (a) and inferior (b) incisions.



Fig 4. Left operative extremity with instruments inserted while patient is in left lateral decubitus position. The superior portal (a) is entered with the endoscope and the inferior portal (b) is entered with a small shaver.

sites are closed with nylon. A soft compression dressing is placed over the elbow. The tourniquet is let down. Uncomplicated procedures are normally completed between 10 and 20 minutes. The patient is transferred to anesthesia in stable condition and sent home the same day.

Postoperative Management and Rehabilitation

Postoperatively, the patient is immediately placed on a 5-pound weightlifting limit and allowed range of

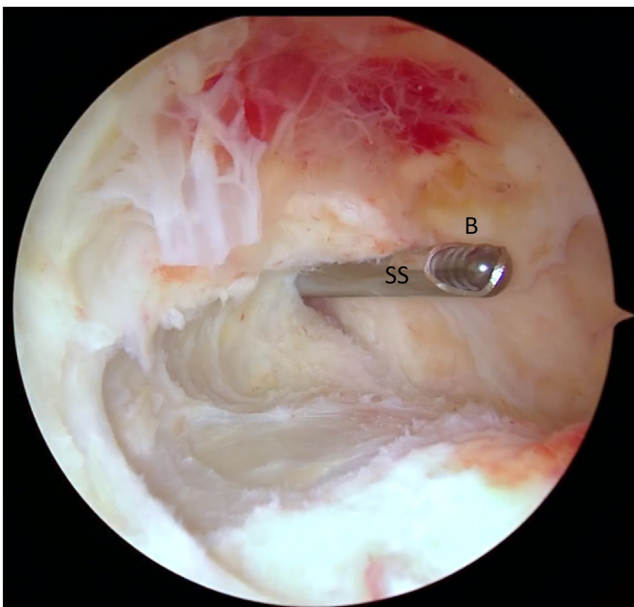


Fig 5. The olecranon bursa (B) is endoscopically removed using the sucker shaver (SS) in the left elbow with the patient in left lateral decubitus position.

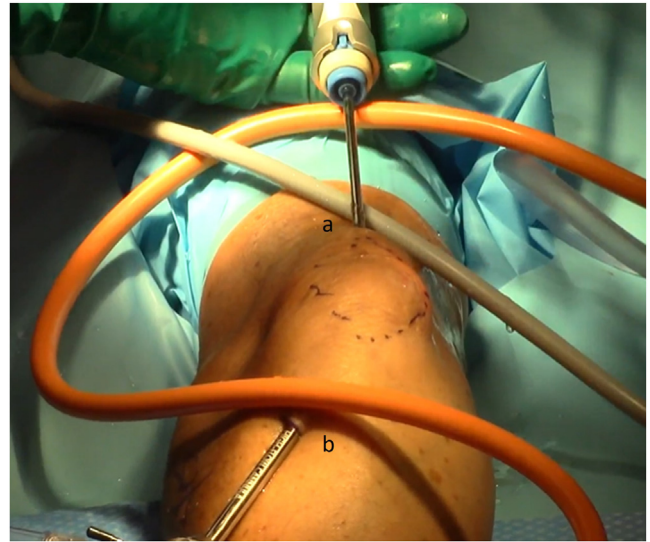


Fig 6. Left operative extremity with instruments inserted while patient is in left lateral decubitus position. With the assistance of a switching stick, the portals are switched so that the superior portal (a) is entered with a small shaver and the inferior portal (b) is entered with the endoscope.

motion as tolerated. The patient is instructed to wear compression dressings for 5 days postoperatively. Unless there are wound issues or sepsis, the patient will start physical therapy on postoperative day 1. Their follow-up visit to the orthopaedic clinic will occur 2 weeks after surgery, although the patient may report at an earlier time at the discretion of the operative surgeon. Once sutures are removed and portal sites have healed, the patient is weightbearing and activities as tolerated. It will typically take approximately 6 weeks for all swelling to subside and for the patient to return to full activities. There is also commonly some significant ecchymosis after the first 4 weeks of the procedure, which resolves over time. See [Video 1](#) under supplementary data for a visual representation of the operative technique.

Discussion

A potential issue with this approach is the fluid loss that occurs when switching the endoscope between incision sites. This makes endoscopic entry into the

Table 1. Pros and Cons of Endoscopic Bursectomy vs Open Bursectomy for Treating Recalcitrant Olecranon Bursitis

Advantages	Disadvantages
Less soft tissue damage	Limited literature on recurrence rates
Fewer wound and skin complications	Harder to remove entire bursa
More aesthetically pleasing scar	More technically advanced
Less invasive	Cannot be used in cases of massive gouty tophi bursitis

inferior incision more difficult. Fluid loss can be reduced by making the switch with a switching stick. Another issue is the delicate nature of the skin atop the olecranon, which can be easily perforated during surgery. To prevent this, it is essential for the assistant to pay attention to the integrity of this skin as the surgeon watches the monitor. Additionally, the blades of the shaver should always be pointed away from the skin.

It may be more difficult to remove all the bursa in the endoscopic approach compared to an open bursectomy. This can manifest as multiple complications. If the patient has septic bursitis, failure to debride the infected tissue appropriately carries a risk of the infection spreading to the fascia. This could potentially result in necrotizing fasciitis.³ Failure to remove an adequate amount of the bursa can also theoretically increase the risk of recurrence.³ This is why this procedure is contraindicated in cases of olecranon bursitis with large amounts of gouty tophi. However, recurrences are a complication of open bursectomies as well.²

This less invasive surgery is advantageous over open bursectomies because it causes less soft tissue damage and fewer wound and skin complications.³ The incisions required for this procedure avoid the extensor surface of the elbow, making healing easier for the patient and resulting in a more aesthetically pleasing scar. The advantages and disadvantages of this approach compared to open bursectomies are

summarized in [Table 1](#). Although endoscopic bursectomies are uncommon and their advantages remain to be proved, there have been some recent studies displaying promising results in their role for the surgical treatment of bursitis.^{3,4} While more studies are needed to properly assess the efficacy of open vs endoscopic bursectomies in treating recalcitrant olecranon bursitis, we believe endoscopic bursectomies are a useful treatment option for these patients.

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