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Case Report

Doxycycline as Sclerotherapy for Recurrent Aseptic Olecranon Bursitis, A New Application of an Existing Therapy

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Abstract

The olecranon is among the most common sites of superficial bursitis and can be quite challenging to manage. Aseptic etiologies comprise up to 80% of the cases, and the traditional management of aseptic olecranon bursitis includes aspiration, activity modification, pads and compressive wraps. Despite conservative care, recurrence can be high, leading to patient frustration and increased health related costs. Operative excision is the traditional treatment of refractory aseptic olecranon bursitis, but has considerable additional costs and complications. Sclerotherapy using doxycycline has been described for other pathologies, including pleurodesis and treatment of Morel Lavallee lesions, and here we describe our application of doxycycline sclerotherapy to treat aseptic olecranon bursitis and discuss the results of three case reports.

Keywords: *Doxycycline; Sclerotherapy; Aseptic Olecranon Bursitis*

Introduction

The various bursae in the body serve to provide smooth, frictionless movement between various anatomic structures [1]. In non-pathologic bursae, they are a potential space in both deep and superficial locations. The olecranon bursa is the site of the most common superficial bursitis, and typically is aseptic [2]. Aseptic olecranon bursitis is typically considered a minor pathologic condition that is easily treatable with scant literature for providing the optimum treatment [1].

Epidemiology

Olecranon bursitis can occur with repetitive stress and is associated with occupations that require leaning on the forearms, such as plumbers, carpenters and miners. It has been associated with football injuries from artificial turf [3], as well as occurring in the setting of chronic systemic diseases such as inflammatory arthropathies, chronic renal failure, crystal deposition arthropathies and alcoholism [4,5]. The true incidence of aseptic olecranon bursitis may be largely underestimated because only 20-30% are septic, and of those only the most severe cases require hospitalization [1].

Evaluation

The initial patient evaluation with elbow swelling requires a detailed history and physical examination. Significant history includes the inciting event, location, duration, constitutional symptoms and onset of the swelling. Additional concerns include past medical history, occupation and previous treatments. Pertinent clinical history will assist in guiding the management strategies.

The physical examination should consist of a thorough elbow evaluation, starting with a detailed inspection of the elbow with particular attention paid to the location, character, size and color of the swelling. During palpation, one should look for induration, fluctuance, mobility and warmth. The elbow should be taken through active and passive range of motion, assessing the limits of flexion/extension, pronation/supination and joint stability, followed by evaluation of strength and sensation.

Standard radiographs should be obtained at the time of initial exam to assess other etiologies of elbow pain and swelling. Radiographs findings of olecranon spurs, calcium deposits and soft tissue swellings should be clearly evaluated and documented.

The differential diagnosis for posterior elbow swelling includes septic and aseptic olecranon bursitis, cellulitis, ganglion cysts, rheumatoid nodules and gouty tophi.

Sclerotherapy

Various types of sclero-therapeutic substances have been used successfully to treat different types of tissue dehiscence with recurrent fluid collections. Specifically, Doxycycline has been described as a safe and effective sclero-therapeutic agent in malignant pleural effusions, Morel-Lavallee lesions of the Hip and Knee, and postoperative lymphoceles [6-9]. While tetracycline has been described as a useful adjuvant for olecranon bursitis in patients with rheumatoid arthritis [10], to date there are no published studies describing Doxycycline sclerotherapy as treatment for aseptic olecranon bursitis.

Sclerotherapy Technique for the Treatment of Olecranon Bursitis

Using sterile technique, 5 cc of lidocaine is used for local skin anesthesia over the area of maximum fluid collection. The Doxycycline is prepared by dissolving 100 mg of Doxycycline powder in 10 cc of sterile water, which is then drawn into a 10 cc syringe. Under sterile conditions, the elbow is aspirated using an 18 gauge needle with an empty 10 or 20 cc syringe. If more than one syringe of fluid is aspirated, the needle is left in place while the syringe is emptied and reused until the entire bursa is drained. The first fluid collected is sent for analysis as needed and the rest is discarded. Once the bursa is drained, the needle is left in place and the 100 mg/10 cc doxycycline mixture is injected into the bursa, and a compressive sterile wrap is placed over the elbow. No immobilization is performed, and movement and use of the elbow is permitted as tolerated.

At the end of the procedure, the patient is instructed to continue compressive wraps for 2 weeks and is allowed to shower at 24 hours. The patient is instructed that various symptoms may occur following the injection. These include mild burning sensation experienced by one of our patients, possible increased size of the bursa and increased warmth of the elbow area.

Typically, the area is still indurated at the 2 week follow up appointment and the patient experiences gradual resolution of symptoms over time. A second aspiration and injection can safely be performed if the patient is still symptomatic at 12 weeks [7]. In our experience, resolution of symptoms typically occurred between 6 - 8 weeks.

Case Report

Case Report #1

A 68 year old female presented to the office complaining of 1 month elbow pain and swelling. She was diagnosed with aseptic olecranon bursitis and 40 cc of fluid was aspirated in the office and a compressive wrap was placed. 1 week later she followed up with her elbow swollen again. 30 cc of fluid was aspirated at the second visit and a compressive wrap was placed.

2 weeks after her first visit, the patient complained of pain waking her up at night with continued elbow swelling. A third aspiration was performed in the office and 40 cc of fluid was recovered. At the end of the aspiration, the elbow was injected with 100 mg of Doxycycline and compressive wrap was placed. 2 weeks after the injection the patient still complained of fluid and swelling in the elbow, and wished to proceed with surgery at that time, which was scheduled for 1 month later.

1 week before her scheduled surgery, the patient called and cancelled her surgery because her pain and swelling had resolved. 6 months after the injection the patient was contacted via telephone, and she was doing well with no pain or swelling.

Case Report #2

A 71 year old male presented with 1 month of elbow pain and swelling. He was seen in the ER 1 week prior to the office visit, when it was drained and he was started on Bactrim. He was diagnosed with aseptic olecranon bursitis, 25 cc of fluid was aspirated and he was injected with 100 mg of Doxycycline. The patient called the office later that day complaining of burning in the elbow, controlled with over the counter pain medicines.

3 weeks after the injection, the patient returned to the office with only mild induration with no fluid in the elbow. At his 5 month follow up the patient was experiencing no swelling or pain and the physical exam demonstrated no fluid collection or warmth with full range of motion.

Figure 1: *Typical appearance of aseptic olecranon bursitis.*

Figure 2: *Injection of 5 cc of lidocaine.*

Figure 3: *Aspiration of olecranon bursitis.*

Figure 4: *Injection of 100 mg Doxycycline/10 cc sterile water.*

Case Report #3

A 69 year old male with multiple medical comorbidities presented with a chief complaint of 3 months of pain and swelling in the posterior elbow. He was diagnosed with aseptic bursitis and after an additional month of conservative care underwent surgical bursectomy. The patient was initially on Xarelto for his medical comorbidities, and this was held prior to surgery. A drain was placed during surgery and the elbow was immobilized in a posterior splint. The patient was allowed to restart Xarelto 1 day after surgery.

The patient followed up in the office 3 days later, when the drain was pulled and the patient was started on Keflex. 8 days postoperatively, he continued to experience persistent drainage, the compressive wraps were continued and the Xarelto held once again. At his 2 week appointment, he continued to have persistent drainage from the inferior aspect of the wound. Sutures were removed at that time and Xarelto was held for 4 more days (Figure 5).

Figure 5: *Appearance of the elbow 2 weeks after olecranon bursectomy. Patient still experiencing minor drainage.*

At his 3 weeks office visit, the wound was healed and no longer draining and was scheduled to follow up as needed. He presented to the office at 6 weeks complaining of minor wound drainage treated with local wound care only. At his 9 week visit, the wound was again closed but the bursa was swollen again and 20 cc of fluid was aspirated in the office and compressive wraps applied. At his 11 week office visit, the patient presented with a large amount of swelling, 50 cc of fluid was again aspirated and compressive wraps were applied.

At his 13 week post-op: 45 cc of fluid aspirated, and the olecranon bursa was injected with 100 mg of Doxycycline and a compressive wrap was placed.

2 weeks after his injection, the patient was still experiencing a small amount of drainage. He experienced a large amount of drainage a few days after the injection and described the drainage as fluid filled with "feathers". Overall his swelling was markedly decreased and patient was doing much better. 6 months after the injection, the patient followed up in office. At that time he was no longer experiencing drainage, swelling or pain (Figure 6).

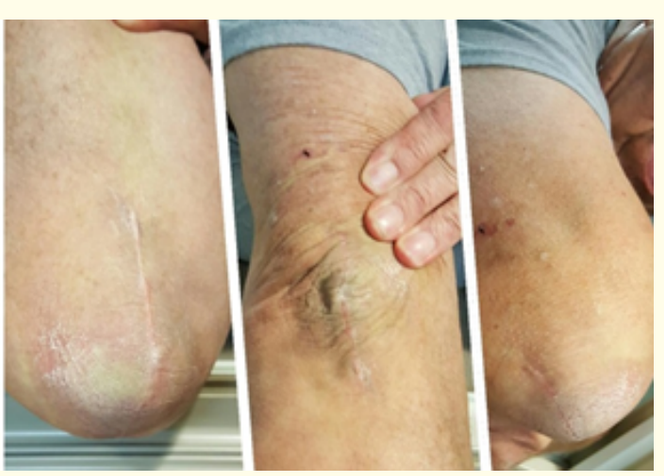

Figure 6: *Appearance of the elbow 6 months after Doxycycline sclerotherapy.*

Discussion

The standard of care for aseptic olecranon bursitis is conservative care and treatment options include compressive wraps, aspirations, steroid injections, elbow pads and activity modification [1]. If conservative care fails, the traditional next step in treatment is surgical excision [1]. Despite surgery, recurrence has been reported and can be frustrating for both the patient and the surgeon, and can be challenging to treat. Doxycycline sclerotherapy is a relatively cheap alternative that can be used to safely and effectively treat olecranon bursitis.

Our three cases demonstrate that sclerotherapy can be quite effective in treating olecranon bursitis with good patient outcomes. The potential risks to this treatment include local wound infection, wound irritation, swelling, scarring of the bursa leading to loss of elbow range of motion, Ulnar nerve irritation/scarring and recurrence [11]. It should be noted the compressive wraps are essential to the therapy and that the procedure can safely be performed a second time at 12 weeks should it fail to eradicate the bursitis after the first injection [7]. Finally, low grade fever the first day after the procedure was a common side effect when doxycycline was used to treat Morel-Lavallee lesions of the hip [7].

The major limitations of the study are the retrospective nature of the study and the small sample size of three. Further research should attempt to prospectively study the efficacy of doxycycline to treat aseptic olecranon bursitis compared to other therapies and whether it can effectively be used at the same time as the initial aspiration. While this therapy needs further investigation, it does provide a cheap, effective means of treating aseptic olecranon bursitis.

Conclusion

The current standard of care for aseptic olecranon bursitis is conservative care including aspiration, compressive wraps, activity modification and possible steroid injection. Our small case series shows that doxycycline injection into the bursa is safe, cost effective, and provides an additional therapeutic adjunct for the treatment of aseptic olecranon bursitis.

Conflicts of Interest and Source of Funding

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