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## A New Approach to the Surgical Treatment of Olecranon Bursitis

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### **Author's contribution**

*The only author performed the whole research work. Author NKS wrote the first draft of the paper. Author NKS read and approved the final manuscript.*

Case Study

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### ABSTRACT

**Aims:** To describe a new approach to the surgical treatment of the nonseptic olecranon bursitis.

**Methods:** The study included 14 patients (13 men, 1 woman; age range 51-77 years) treated in a 10-year period. Patients with a systemic inflammatory disease were excluded. All patients had already been treated with bursal aspiration associated with multiple punctures of the cyst wall and compressive dressing. Clinical features, ultrasonography and analysis of the aspirated bursal fluid were indicative of a nonseptic olecranon bursitis. The new approach included surgical incision to drain the bursa and the use of a Penrose drain tube for post-operative drainage for an average of 5 days. The wound was treated by secondary closure. No antibiotics were used.

**Results:** Eleven patients showed rapid secondary healing of the wound which reached 7 to 14 days following the Penrose drain removal. Wound healing was delayed in 3 patients and required approximately a month. The long-term follow-up ranged from 2 to 10 years. No recurrences or complications were encountered.

**Conclusion:** This novel approach proves that excision of the bursa is not a mandatory step in the surgical treatment of olecranon bursitis. It is worthwhile to consider this new approach as the first step in the surgical management of the, non-responsive to conservative treatment, nonseptic olecranon bursitis.

*Keywords: Nonseptic olecranon bursitis; new approach; Penrose drain; secondary closure.*

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## **1. INTRODUCTION**

Swelling of the olecranon bursa is classified as septic or nonseptic (aseptic). A wide range of conservative and surgical treatments has been suggested in the literature for both acute and chronic nonseptic bursitis. Conservative treatment usually includes splints, compression, nonsteroidal anti-inflammatory drugs, aspiration, or intrabursal steroid injections. Surgical intervention is usually needed when conservative treatment fails. Operative treatment consists of complete resection of the olecranon bursa through an open procedure or arthroscopy, excision of a prominent olecranon process or spur, or the temporary intrabursal placement of a drainage catheter. Aspiration alone is usually associated with a high recurrence rate, while steroid injection may be complicated by significant side-effects. In addition, there is a significant risk of wound healing problems and a high recurrence rate following open bursectomy [1,2].

Fourteen patients with a nonseptic olecranon bursitis that recurred following conservative treatment were offered a new surgical approach. The procedure included surgical incision to drain the bursa and the use of a Penrose drain tube for post-operative drainage for an average of 5 days. The wound was allowed to close by secondary intention. The purpose of this review was to determine the value of the described procedure.

## **2. MATERIALS AND METHODS**

All patients presenting with a nonseptic olecranon bursitis were initially treated conservatively. This included bursal aspiration associated with multiple punctures of the cyst wall using an 18-gauge needle and compressive dressing. The aspirated fluid was routinely analyzed. Patients with a history of a systemic inflammatory disease were excluded. The bursitis recurred in 14 cases.

Therefore, these 14 patients treated at our institution from January 2002 to December 2011 were included in the study. The inclusion criteria were clinical, ultrasound and laboratory findings. Clinical signs indicated a homogenous distention of the olecranon bursa with no clinical manifestation of palpable nodules (Fig. 1a), the ultrasonographic findings a cystic lesion with no other abnormalities, and the results of the aspirated fluid analysis no evidence of acute or chronic inflammation. Radiographs of the elbow indicated no abnormal bone findings with the exception of a mild bony spur at the olecranon process and arthritis in the 2 oldest cases.

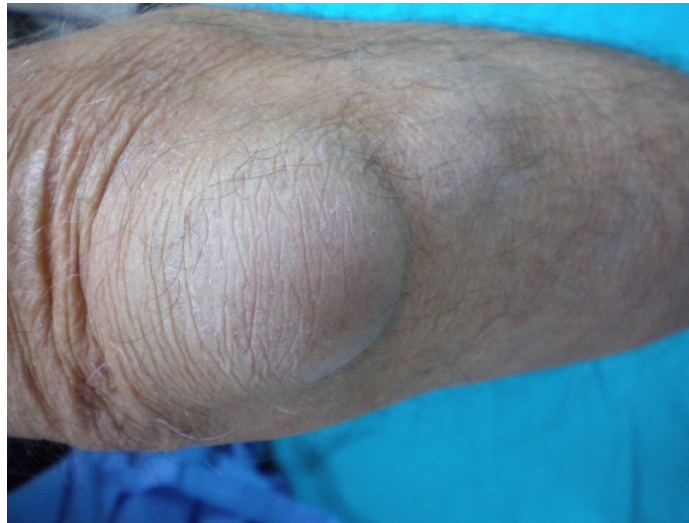
In all cases, the surgical procedure was performed in the minor operating theatre but on an out-patient basis. Under aseptic precautions xylocaine 2% was used for local anesthesia. The bursa was drained through a 1.5 centimetres incision from the distal aspect parallel to the elbow crease. The bursal content was a clear yellowish synovial fluid in 12 patients and hemorrhagic in 2. A curved mosquito forceps was used to introduce a Penrose drain tube, 0.5 inch in diameter, within the bursal cavity space (Fig. 1b). A sterile compressive elbow dressing was used and the patient was sent home. No antibiotics were given. No restriction of activity was required. Removal of the drain was performed after an average of 5 days (range 4 to 6 days). The wound was allowed to close by secondary intention.

### **3. RESULTS**

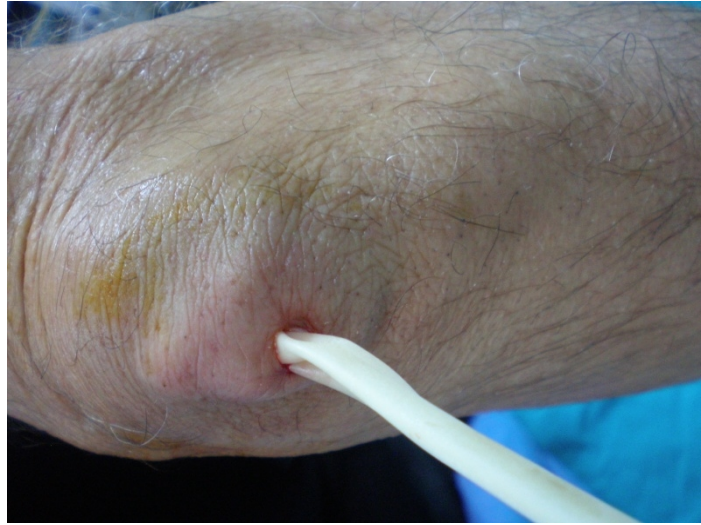
In this study, thirteen men and one woman, with an age range from 51 to 77 years (mean 63 years) were included. All 14 patients were initially treated with aspiration associated with multiple punctures of the cyst wall using an 18-gauge needle and a compressive dressing. Diagnostic aspiration was performed in all cases by that time. About 10 cubic centimetres of bursal fluid was sent for cytologic examination including erythrocyte and leukocyte count and type, rheumatoid factor, lactate dehydrogenase, total protein, glucose concentration, uric acid and microscopic examination for crystals. Ultrasonography indicated an effusion of the olecranon bursa with no further abnormalities.

In the short-term follow-up, 11 patients showed rapid secondary healing of the wound within approximately 7 to 14 days following the Penrose drain removal. Bandaging was removed by that time. Wound healing was delayed in 3 patients exhibiting no signs of infection but insignificant serous discharge necessitating changing of the dressings every 3-4 days for a total of approximately a month. Bandaging was stopped by that time.

The long-term follow-up ranged from 2 to 10 years (average 5 years). All patients were contacted by telephone. A follow-up appointment was arranged only in 3 patients who exhibited the longest wound healing period (Fig 1c). No skin problems, pain or recurrences were encountered. None of the patients reported any restriction of movement at the elbow joint.



**Fig. 1a. Nonseptic olecranon bursitis in a 70-year-old man**



**Fig. 1b. The bursa was incised and a penrose drain tube was used for post-operative drainage**



**Fig. 1c. No recurrence or complications were encountered 3 years post-operatively**

#### **4. DISCUSSION**

History and clinical examination are usually sufficient to differentiate the aseptic from the infected olecranon bursitis [3]. The absence of pain is usually diagnostic of a nonseptic lesion [4]. However, occasionally, a degree of uncertainty may be evident. In such cases, the value of specific diagnostic tests [5] and methods [6] has been suggested. Trauma is the most common cause of the nonseptic bursitis. There may be a single traumatic episode or repetitive friction and micro-injuries over the elbow [1,7]. Underlying inflammatory diseases such as chronic tophaceous gout, rheumatoid arthritis and CREST syndrome have to be considered in the differential diagnosis [8,9,10]. Cases with no obvious pathology are

classified as idiopathic. Aspiration of hemorrhagic bursal fluid in such patients is indicative of a missed traumatic history [4].

Ultrasonography is very useful in the diagnosis and management of patients with olecranon bursitis. It is effective in the evaluation of effusions, synovial proliferation, calcifications, loose bodies, rheumatoid nodules, gout tophi and septic bursitis [11].

Nonseptic olecranon bursitis can be managed with conservative approaches, especially at the early stages. These include elbow pads, ice, rest, nonsteroidal anti-inflammatory medications and bursal fluid aspiration with or without corticosteroid intrabursal injection [1]. Patients treated with aspiration and local corticosteroid injection demonstrated more favorable outcomes than patients who received aspiration alone [12,13]. However, the incidence of corticosteroid-induced side effects either systemic or local, such as pain, skin atrophy and infection, may be increased to a varying degree [12,14].

Surgery is indicated in patients with poor or no response to conservative measures [15]. Surgical removal of the olecranon bursa may be associated with wound healing problems and a high recurrence rate exceeding 27% and 22%, respectively, when performed as a traditional open surgical procedure [16]. Such problems may be avoided with arthroscopic bursal resection [17]. In recurrent bursitis, the use of talcum powder was associated with favorable results [18].

Alternatively, excision of the olecranon process sparing the bursa itself appears to give satisfactory results [19]. Besides, the use of a No. 16 angiocath for 3 days or even longer has been suggested for the treatment of distended patellar and olecranon bursae but with no related clinical data [20].

Little information is provided in the literature about the appropriate treatment of acute or chronic nonseptic olecranon bursitis [21]. Treatment of nonseptic olecranon bursitis should, as far as possible, be minimalist in view of the risk of complications. The corticosteroid injection may be associated with a wide variety of adverse effects. It should not be administered at the time of first aspiration, since a significant complication rate in terms of infection and outcome has been demonstrated. If conservative treatment fails, surgical bursectomy may be performed. However, it may be associated with a significant risk of wound healing problems and a high recurrence rate. Post-operatively, the elbow should be immobilized in a well-padded splint/cast in no more than 60° of flexion [2,14].

Until further data are available, we adopted the views recommending a conservative approach to treat nonseptic olecranon bursitis [2,21]. We routinely use aspiration associated with multiple needle punctures, using an 18-gauge needle, of the cyst wall and a compressive dressing as the primary treatment of a synovial cyst of the upper or lower limbs. Therefore, we used aspiration associated with multiple needle punctures of the bursal wall as the initial treatment for all patients presenting with a nonseptic olecranon bursitis. A fluid analysis was routinely performed in all patients. We also agree with McAfee and Smith [21] that repeated aspiration of the olecranon bursa is of little value.

A new surgical approach was used for the treatment of nonseptic olecranon bursitis that recurred following an initial aspiration associated with penetrations of the cyst wall. All included patients had no local or systemic signs of infection, no clinical evidence of nodulations, ultrasound scanning demonstrated a fluid filled lesion with no further abnormalities and fluid analysis provided no evidence of an underlying pathology. The

technique involved surgical incision to drain the bursa and the use of a Penrose drain tube for post-operative drainage. The wound was allowed to heal by second intention, following the Penrose removal, providing that the drain site was kept open until full granulation of the bursal cavity. The required healing period extended from 1 to 4 weeks. This extended healing period and the regular change of dressings was well-tolerated by our patients. Antibiotics were not used. Complications regarding skin healing were not encountered in our patients. A cure rate of 100% was observed in the patients treated by this new surgical approach.

The described novel approach for the surgical treatment of the nonseptic olecranon bursitis can be carried out under local anesthesia on an out-patient basis. It is safe, drug-free, cost-effective, less time-consuming and well-tolerated by the patients. Recurrences and skin complications are completely avoided.

It is worthwhile to consider this new approach as the first step in the surgical treatment of the, non-responsive to conservative management, nonseptic olecranon bursitis.

## **5. CONCLUSION**

A new surgical approach was used in 14 patients for the treatment of the, non-responsive to conservative management, nonseptic olecranon bursitis. It included surgical incision to drain the bursa and the use of a Penrose drain tube for post-operative drainage for an average of 5 days. The wound was allowed to close by secondary intention. No recurrences or complications were encountered.

This novel approach proves that excision of the bursa is not a mandatory step in the surgical treatment of olecranon bursitis.

## **CONSENT**

Written informed consent was obtained from the patients for the publication and accompanying images.

## **ETHICAL APPROVAL**

Not applicable.

## **COMPETING INTERESTS**

The author has declared that no competing interests exist.

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