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# The Efficacy of the Office based Treatment of Mucous Cysts at Dip Joints

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## Abstract

**Background:** Mucous cysts of the fingers are common and frequently origin from the distal interphalangeal (DIP) joint. Many conservative and surgical treatment options are available, however due to variable success rates none has proven to be superior. We propose a new, office-based technique for the treatment of mucous cyst.

**Methodology:** The technique is based on repetitive needling and puncturing of the mucous cyst at DIP joint level down to the bone followed by silver nitrate cauterization at outpatient clinic.

**Results:** 36 fingers were treated in 31 patients. Mean pain using a VAS score at final follow-up was 1,7 (range 0 - 6). Mean follow-up time was 68 months (range 57 - 84). Seven patients had a recurrence (19,4%) with a mean recurrence time of 8,4 months (range 5 - 12).

**Conclusion:** this new office- based technique is an effective method for treatment of mucous cysts in terms of time saving; it is cost effective and very satisfying for patients. Moreover, it will always keep the surgical option available in case of recurrence.

***Keywords:*** *Mucous Cyst; DIP Joint; Repetitive Needling*

## Introduction

Mucous cysts of the fingers are common and frequently origin from the distal interphalangeal (DIP) joint [1,2]. It was first described in 1883 by Hyde, characterized as synovial lesions of the skin. Hyde described these lesions as "pseudo-vesicles and bullae" and determined that they have a direct connection to the bursa of the synovium [3,4].

The ganglion arises due to leakage of joint fluid into the dermis where a cyst is formed. This leakage is caused by a herniation of the joint capsule. The capsule is possibly abraded and damaged by the arising osteophytes during the aging process which causes the capsule to herniate at points of weakness, causing leakage of joint fluid at the site of lowest resistance. Herniation is often associated with osteoarthritis of the joint [1,3,4].

Alternative names for digital mucous cysts are: myxoid cysts, synovial cysts, mucous cysts, and myxomatous cutaneous cysts. These cysts commonly present as solitary, oval, smooth nodules near the distal interphalangeal joint [5,6].

Many conservative and surgical treatment options are available, however due to variable success rates none has proven to be superior [7,8]. Mucous cyst excision with concomitant debridement of the underlying DIP joint osteophytes is currently the most commonly accepted treatment. If needed, a local rotational flap can be performed to cover the defect.

## Purpose of the Study

The purpose of this article is to report the results of a new office-based technique for the treatment of mucous cyst which was developed by the senior author.

## Methods

This is a retrospective study that aims to measure the efficacy of repetitive needling and silver nitrate cauterization to alternative surgical procedures for the treatment of mucous cysts at the level of DIP joint in the outpatient care service.

### Intervention

This is an outpatient procedure. Under a septic technique, local anesthetic is infiltrated around the lesion. The procedure consists of repetitive needling and puncturing of the mucous cyst at DIP joint level down to the bone until the crystal gelatinous material is drained out, followed by silver nitrate cauterization.

### Patient selection

All patients with mucous cyst at DIP joint of the fingers are included in the study except those patients who received previous surgical treatment at the same digit, and patients presenting with mucous cyst with nail bed deformity or having cysts adjacent to germinal matrix.

### Measurements for the efficacy of the proposed method of treatment

- Recurrence rate
- Infection rate.
- Scar length and appearance.

### Data collection

Data registry of CMKI for patients with mucous cyst treatment were retrieved from medical records to collect the following data: Age of patient, Duration of follow up, finger affected and laterality, Gender, Presence of pain and scale post-surgery, recurrence and infection rate. As well as the time interval from the date of the clinic visit to the date of surgery if mucous cyst is recurred.

## Results

During a 1-year period, 36 fingers were treated in 31 patients. Mean patient age was 66 years (range 52 - 82). Mean pain using a VAS score at final follow-up was 1,7 (range 0 - 6). Mean follow-up time was 68 months (range 57 - 84). Seven patients had a recurrence (19,4%) with a mean recurrence time of 8,4 months (range 5 - 12) (Table 1 and 2).

| | N | Result |
|---|---|---|
| Mean follow up (m) | 36 | 68 |
| Mean Pain (VAS) | 36 | 1.5 |
| Recurrence rate (%) | 36 | 19.4 |
| Mean recurrence time (m) | 7 | 8.4 |

***Table 1:*** *Study results.*

| Case No | Age | Gender | Location | Mean follow up (m) | Recurrence of mucous cyst | Infection | Recurrence time (m) | Pain scale (VAS) |
|---|---|---|---|---|---|---|---|---|
| 1 | 69 | F | Rt Thumb | 72 | No | No | | 2 |
| 2 | 66 | F | Lt Long Finger | 60 | No | No | | 2 |
| 3 | 72 | F | Rt Ring Finger | 73 | No | No | | 0 |
| 4 | 69 | F | Rt Thumb | 65 | No | No | | 0 |
| 5 | 61 | F | Rt Long Finger | 63 | No | No | 12 | 1 |
| 6 | 71 | F | Rt Index Finger | 76 | No | No | | 0 |
| 7 | 60 | F | Rt Index Finger | 72 | No | No | | 0 |
| 8 | 62 | F | Lt Thumb | 74 | No | No | | 1 |
| 9 | 61 | F | Lt Long Finger | 84 | No | No | | 3 |
| 10 | 78 | F | Lt Index Finger | 71 | No | No | | 3 |
| 11 | 66 | F | Lt Long | 61 | No | No | | 4 |
| 12 | 66 | F | Rt Thumb | 61 | No | No | | 0 |
| 13 | 66 | F | Rt Index Finger | 57 | No | No | | 2 |
| 14 | 68 | F | Lt Thumb | 81 | No | No | 10 | 0 |
| 15 | 78 | M | Rt Long Finger | 75 | No | No | | 6 |
| 16 | 72 | F | Rt Index Finger | 60 | No | No | 5 | 5 |
| 17 | 67 | F | Rt Small Finger | 56 | No | No | 8 | 2 |
| 18 | 67 | F | Lt Index finger | 73 | No | No | | 0 |
| 19 | 67 | F | Rt Thumb | 73 | No | No | | 0 |
| 20 | 53 | M | Rt Small Finger | 60 | No | No | | 3 |
| 21 | 57 | F | Rt Ring Finger | 23 | No | No | 11 | 0 |
| 22 | 82 | F | Rt Index Finger | 59 | No | No | | 0 |
| 23 | 72 | M | Rt Ring Finger | 70 | No | No | | 0 |
| 24 | 79 | M | Rt Long Finger | 40 | No | No | | 1 |
| 25 | 52 | F | Rt Long Finger | 64 | No | No | | 0 |
| 26 | 65 | M | Rt Thumb | 39 | No | No | | 0 |
| 27 | 79 | F | Lt Long Finger | 65 | No | No | | 1 |
| 28 | 63 | F | Rt Long Finger | 76 | No | No | | 0 |
| 29 | 61 | F | Lt Long Finger | 52 | No | No | | 1 |
| 30 | 81 | F | Rt Thumb | 15 | No | No | | 3 |
| 31 | 57 | F | Lt Thumb | 76 | No | No | | 5 |
| 32 | 57 | F | Rt Thumb | 76 | No | No | | 2 |
| 33 | 58 | F | Rt Thumb | 71 | No | No | 7 | 2 |
| 34 | 58 | F | Rt Index Finger | 71 | No | No | | 1 |
| 35 | 65 | F | Lt Thumb | 75 | No | No | | 3 |
| 36 | 65 | F | Rt Long | 75 | No | No | 6 | 2 |

***Table 2:*** *Results of cases with mucous cyst, total 31 patients with 36 fingers.*

***Figure 1:*** *Mucous cyst at left long finger.*

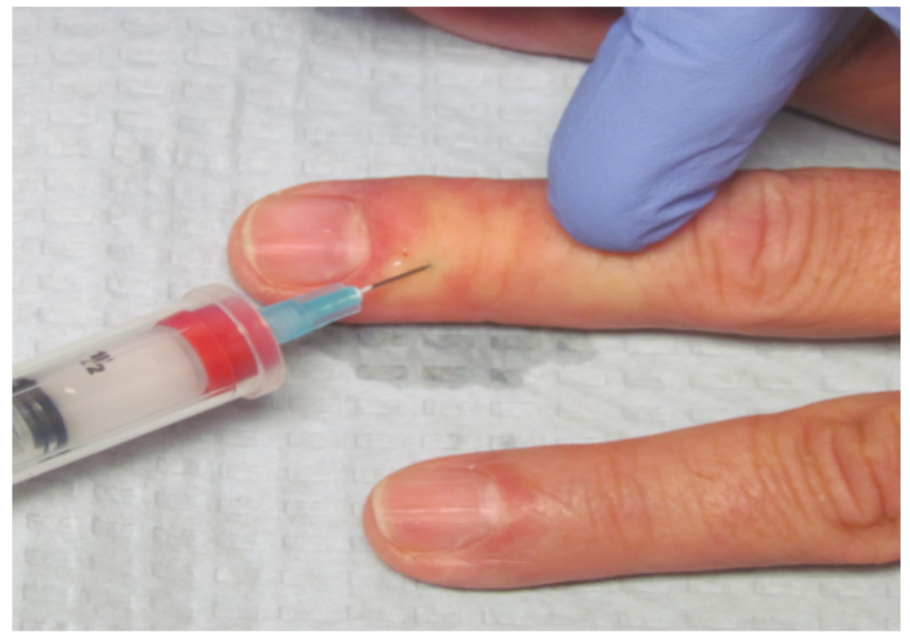

***Figure 2:*** *Injecting xylocaine 1%.*

***Figure 3:*** *Multiple repetitive needling of the mucous cyst deep to the DIPJ until jellylike material is drained out.*

***Figure 4:*** *Using silver nitrate stick to cauterize the cyst.*

***Figure 5:*** *Left long finger mucous cyst after cauterization by silver nitrate.*

***Figure 6:*** *Healed scar three month after procedure.*

## Discussion

Mucous cysts of the distal interphalangeal joints are common. Many conservative methods for treatment of mucous cysts were described but no one proved to superior. Several conservative methods and surgical techniques have been described, but none has proven to be superior. This controversy in results are probably attributed to the variable period of patients follow up after mucous cyst treatment, different techniques, as well as the severity of associated distal interphalangeal joint osteoarthritis.

Some controversy remains on recurrence rates in conservative treatment methods. Cryotherapy is available in many institutions; however, this treatment is painful with a risk of significant scarring [10,11]. $CO_2$ laser therapy showed very good results (no recurrence) in a small study of 10 patients with a follow up of 14 to 44 months [12]. On the other hand, a success rate of 86% was reported with infrared coagulation in a study of 23 patients, but a risk for surrounding tissue damage and blistering was mentioned [13]. Also, in surgery, different options are available with similar controversy on outcome and recurrence.

We propose a new, office-based technique for the treatment of mucous cyst. Patients are offered the treatment method from their first visit and it consists of repetitive needling of the mucous cyst down to the level of DIP joint level with silver nitrate cauterization. It is a simple procedure that is performed in the setting of outpatient care. The procedure is effective in terms of time saving; it's cost effective and very satisfying for patients. Moreover, it will always keep the surgical option available in case of recurrence.

In our series, patients had long term follow up which is essential to evaluate the possibility of recurrence after mucous treatment; we got 7 out of 36 fingers (in 31 patients) with recurrent mucous cyst after a mean follow up of 68 months. The mean time from initial treatment to recurrence is 8.4 month. We did not encounter any infections or other complication in our case series.

These results relative to other conservative methods are good. Rizzo [14] in his series of 80 patients had 40% recurrence rate with mean follow up of 5.9 years, the method based on 3:1 dilution of 1% lidocaine betamethasone. Dodge [15] and his colleagues studied treating mucous cyst by decapping with steroid therapy; they had a recurrence rate of 36% in total of 28 patients for follow up period of 5.1 years.

On the other hand, Sung [16] had shorter follow up and less series of patients who were treated by 0.5% sodium tetradecyl sulfate. They had mean follow up of 18.3 months and recurrence rate of 36%.

## Conclusion

In conclusion we recommend this method for the management of all mucous cysts as an office-based treatment except for cysts that are adjacent to germinal matrix to prevent consequences of nail bed deformity. This method is simple, cost effective and very satisfying for patients with good outcomes.

## Conflicts of Interest Statement

The authors whose names are listed immediately below certify that they have no affiliations with or involvement in any organization or entity with any financial interest (such as honoraria; educational grants; participation in speakers' bureaus; membership, employment, consultancies, stock ownership, or other equity interest; and expert testimony or patent-licensing arrangements), or non-financial interest (such as personal or professional relationships, affiliations, knowledge or beliefs) in the subject matter or materials discussed in this manuscript.

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