

Mucous Cysts

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THE PATIENT

A 62-year-old, right-handed woman presents with a bump on the dorsum of her distal interphalangeal joint that she first noted 9 months ago. There is a slight groove of her nail, which she finds unsightly. The skin overlying the cyst is slightly thinned. Radiographs reveal mild osteoarthritis of her distal interphalangeal (DIP) joint, with osteophyte formation. The digit has full range of motion. She requests treatment to remove the cyst.

THE QUESTION

What is the best way to treat her mucous cyst?

CURRENT OPINION

Nonsurgical management and surgical excision are considerations. Various surgical techniques include excision or intraoperative draining of the cyst, with or without skin graft or flap coverage. Mucous cyst excision with concomitant debridement of the underlying DIP joint osteophytes and rotation flap, as needed, is currently the most commonly accepted treatment.^{1,2}

THE EVIDENCE

Natural history of mucous cysts

Mucous cysts are benign and do not require treatment. Patients elect treatment for aesthetic reasons and for pain. Patients should be advised that cyst excision might not provide complete pain relief in the context of an underlying arthritic joint, because pain can be due to either the cyst or the underlying arthritic joint.^{1,3,4} The only treatment that can ensure a cyst will not recur is DIP joint arthrodesis.² Otherwise, it is always possible that a new cyst could form because of the underlying arthritic joint.⁴

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Received for publication January 15, 2010; accepted January 26, 2010.

No benefits in any form have been received or will be received related directly or indirectly to the subject of this article.

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0363-5023/10/35A05-0022\$36.00/0
doi:10.1016/j.jhsa.2010.01.029

Aspiration and corticosteroid injection

Epstein found recurrence in 6 of 6 cysts 1 to 9 months following steroid injection.⁵ Goldman injected 41 cysts with corticosteroids and documented a 68% recurrence rate.⁶ Dodge noted a 36% recurrence rate following aspiration with steroid injection at 6.2-year follow-up.⁷

Rizzo et al. reported on 80 cysts that had multiple punctures and steroid injection, with a 40% recurrence rate at minimum 2-year follow-up. Repeat injections in 8 patients who experienced recurrence led to resolution in 3 patients.³ Infection occurred in 2 of 80 patients, and both resolved with oral antibiotics.³ Epstein performed multiple needlings with a 26-gauge needle, without steroid injection, and reported a 70% success rate at mean 23-month follow-up.⁸

Surgical treatment

Cyst excision without osteophyte excision: Crawford noted that 7 of 25 patients treated with cyst excision and no osteophyte excision experienced recurrence of the cyst.⁹ Dodge reported recurrence in 5 of 18 patients at mean 7.5-year follow-up after excision of the cyst as well as any proliferative synovium or protruding osteophytes but not routine osteophyte excision. One surgery was complicated by osteomyelitis, requiring arthrodesis of the DIP joint.⁷ Constant noted that 4 of 42 cysts recurred following simple excision.¹⁰

Cyst excision with routine distal interphalangeal joint osteophyte excision: Rizzo reviewed 54 patients a minimum of 2 years after cyst excision with routine removal of osteophytes. Thin skin was debrided and allowed to heal by secondary intention. There were no recurrences, and nail ridging resolved in 25 of 31 fingers. No new nail deformities or joint instability occurred. Three infections occurred after surgery; 2 resolved with oral antibiotics, and one required surgical debridement followed by antibiotics.³

Fritz excised 86 cysts and accompanying osteophytes. Rotation flaps were performed in 58/86 (67%). At mean 2.6-year follow-up, 3 of 86 recurred and were successfully treated by re-excision. Seventeen percent (15/86) lost 5° to 20° of extension, with a mean loss of 10°. There was one superficial infection, and 2 developed septic arthritis, which was treated with arthrodesis

of the DIP joint. Sixty percent (15/25) of nail deformities resolved, and 7% of patients (4/61) developed a nail deformity after surgery.²

Kasdan removed 113 cysts with osteophyte debridement and primary closure. Only 2 cysts recurred, after 40 months. There were 2 infections. Nail deformities corrected in 40 of 46 fingers.¹¹

Eaton noted that only one of 50 cysts recurred following routine osteophyte excision, with all preoperative nail deformities resolving within 6 months.¹² Kleinert reported no recurrences 12 to 18 months after cyst and osteophyte excision in 36 patients.¹³ Brown reported no recurrences following removal of 22 cysts with osteophyte debridement. Thirty-six percent (8/22) had residual nail deformities, which were mild.¹⁴

MacCollum reported no recurrences after debridement of 22 cysts with joint debridement, synovectomy, and flap closure. Seven of 22 lost an average of 20° of motion.¹⁵ Newmeyer reported no recurrences following cyst excision with osteophyte debridement in 20 patients.¹⁶

Joint debridement without formal cyst excision: Gingrass performed a prospective study of 20 cysts with nail deformities that had osteophyte debridement without cyst excision. The ganglion was drained into the wound when its stalk was cut during joint debridement. The cyst wall was left intact. The authors reported no recurrences at mean 3-year follow-up. Eighteen patients had complete resolution of the nail deformity, and 2 had a slight residual groove. The authors note that excision of the cyst wall risks injury to the germinal matrix and is unnecessary. Avoiding formal cyst excision decreased residual nail deformity from 36% (8/22 in an earlier series performed by the same authors¹⁴) to 10% (2/20), without increasing recurrence.¹⁷

Management of cysts with thinned skin: Most surgical wounds can be closed primarily. The treatment of thin, eroded skin is controversial. Many believe that this skin should be excised along with the cyst, and that the defect should be closed by a rotation or advancement flap to bring good skin in to cover the area where the cyst was located. However, it has been noted that the thin skin will heal and provide adequate skin coverage, and even full-thickness skin defects can be left to heal secondarily.⁴

SHORTCOMINGS OF THE EVIDENCE AND DIRECTIONS FOR FUTURE RESEARCH

The scientific data regarding mucous cysts consist almost entirely of retrospective studies, and much of what is done or recommended is based on expert opinion. The various treatment options have not

been systematically compared. Future research should prospectively evaluate the results of different surgical techniques. Recurrences can occur as late as 18 months after treatment; studies with limited follow-up might underestimate the actual recurrence rate.²

MY CURRENT CONCEPTS FOR THIS PATIENT

My approach to patient care in general is to re-

serve elective surgery for failure of nonsurgical management. I would aspirate the cyst and ask the patient to return if the cyst recurred. This approach also allows the patient to reflect on their understanding of mucous cysts and to reconsider their goals and motivation for surgical treatment. I do not usually use steroids, because their addition has not been found to decrease the recurrence rate.

If the patient returns with a recurrent cyst, I offer surgical treatment. To ensure that their goals are in line with what surgical treatment can offer, I reiterate that pain relief can be unpredictable.

The pedicle from the DIP joint to the ganglion lies between the terminal slip and the collateral ligament, and occasionally it can connect on either side of the terminal slip.¹⁶ Therefore, I dissect down to the DIP joint on both sides of the extensor tendon.

To my knowledge, it remains unclear why osteophyte excision decreases ganglion recurrence. Its efficacy might be related to the enlarged dorsal joint opening that osteophyte excision creates, inhibiting the reformation of the one-way valve mechanism associated with mucous cyst formation. Consequently, I use a small rongeur to remove any osteophytes I find, from either the distal or middle phalanx, between the terminal slip and either collateral ligament.

I do not formally dissect out or remove the cyst walls. If a large area of nonviable skin has been created by the mucous cyst, I prefer to perform an advancement flap.

EDUCATIONAL OBJECTIVES

- Discuss the nonsurgical and surgical treatment options for a mucous cyst.
- Compare and contrast the advantages and disadvantages of each surgical treatment.
- Describe the possible effects to the nail that can occur during treatment of a mucous cyst.
- State the options for treatment of thin skin overlying a mucous cyst.
- Describe the characteristic nail deformity and the possible effects of surgery on the nail plate.

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JOURNAL CME QUESTIONS

Mucous Cysts

What is the only treatment that can ensure a cyst will not recur?

- a. Complete excision
- b. Skin graft
- c. Joint debridement
- d. Synovectomy
- e. Arthrodesis

What is the advantage of joint debridement without formal cyst excision?

- a. Lower recurrence rate
- b. Less chance of infection
- c. Decreased incidence of iatrogenic nail deformity
- d. Easier access to the distal interphalangeal joint
- e. No advantage

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