



ELSEVIER



Timing of intra-lesion shaving for surgical treatment of chronic tophus



Su-Shin Lee^{a,b}, Meng-Chum Chen^c, Yun-Hui Chou^c,
Sin-Daw Lin^{a,b}, Chung-Sheng Lai^{a,b}, Ying-Cheng Chen^{d,*}

^a Division of Plastic Surgery, Department of Surgery, Kaohsiung Medical University Hospital, Kaohsiung City, Taiwan

^b Department of Surgery, Faculty of Medicine, Collage of Medicine, Kaohsiung Medical University, Kaohsiung City, Taiwan

^c Department of Nursing, Kaohsiung Medical University Hospital, Kaohsiung City, Taiwan

^d Department of Surgery, Changhua Christian Hospital, Changhua, Taiwan

Received 24 June 2012; accepted 31 March 2013

KEYWORDS

Gout;
Tophus;
Shaver;
Surgery;
Hyperuricaemia

Summary Objectives: Gouty arthritis results from the deposition of monosodium urate crystals in synovial spaces. The literature shows that a tophus may require surgical treatment to improve cosmesis or function, to alleviate pain, to eradicate sinus drainage or to remove large urate deposits. However, forceful curettage to remove tophus particles embedded in the thin attenuated skin flap may compromise blood circulation and cause other complications. This series presents the experience of the authors in performing intra-lesion shaving during the surgical treatment of tophus patients.

Methods: This study analysed 147 surgical procedures performed in 108 patients with chronic tophus at a single hospital during November 2000 to July 2010. All patients underwent a soft-tissue shaver-assisted intra-lesion excavating technique developed by the authors. Bimanual palpation of the skin was performed to avoid trauma to the skin envelope. The shaving technique proved to be a simple and efficient method of reducing the total urate burden in the body.

Results: Compared to conventional surgical treatment, the shaver technique is a safer and more effective option for treating tophus lesions. In this series, wound cultures were positive in 18.4% of operations. Patients with positive wound cultures and chronic renal impairment had significantly longer hospital stays compared to patients with negative wound cultures and patients without chronic renal impairment ($P = 0.0019$ and $P = 0.0045$, respectively); patients with C-reactive protein (CRP) $<5 \text{ mg l}^{-1}$ and white blood cell (WBC) count $<10,000 \mu\text{l}^{-1}$ had significantly shorter hospital stays compared to patients with CRP $>5 \text{ mg l}^{-1}$ and WBC $>10,000 \mu\text{l}^{-1}$ ($P = 0.0002$ and 0.006 , respectively). The upper extremities group and the upper-lower extremities group had significantly shorter hospital stays compared to the lower extremities group ($P = 0.001$ and $P = 0.0014$, respectively).

* Corresponding author. Tel.: +886 4 7238595; fax: +886 4 7232942.

E-mail addresses: k831702000@gmail.com, 137448@cch.org.tw (Y.-C. Chen).

Conclusions: Medical treatment to control hyperuricaemia is important for reducing the risk of an acute attack of tophus formation. However, the data in this series show that surgery should be performed before the skin becomes ulcerated and before the tophus mass becomes infected. The proposed shaver technique markedly reduces tophus of the extremities with minimal surgical complications.

© 2013 British Association of Plastic, Reconstructive and Aesthetic Surgeons. Published by Elsevier Ltd. All rights reserved.

Gouty arthritis is a common inflammatory joint disease. The main clinical issues associated with hyperuricaemia are gouty arthritis, gouty tophus and uric acid kidney stones.¹ Gouty arthritis is caused by the deposition of monosodium urate (MSU) crystals in the synovial space.² Four clinical stages are distinguishable by asymptomatic hyperuricaemia, recurrent attacks of acute arthritis, inter-critical gout and chronic tophus gout.³ Chronic gout is usually managed by lowering and maintaining serum urate concentration at sub-saturating levels.⁴ Diet and genetic polymorphisms of renal transporters of urate are reportedly important causal factors of primary gout and chronic hyperuricaemia.⁵ Urate-lowering therapy is indicated for patients with recurrent gout attacks, chronic arthropathy, tophi and gout with renal stones.⁵ Although the pathogenesis and pathophysiology of the disease are well understood, poor clinical outcomes are not uncommon.⁶

Chen et al.⁷ reported that reducing serum urate levels to below 6 mg dl^{-1} prevents or decreases gouty attacks and depletes MSU crystals from the joints. Nevertheless, the skin overlying the tophus may ulcerate and extrude white, chalky material. When this occurs, surgical excision should be performed to correct local mechanical problems and lower the body urate load. Surgical treatment of tophus gout may be performed to improve cosmesis, to alleviate pain, to restore or improve function, to eradicate draining sinuses and to remove large urate deposits.⁸ However, surgical intervention by forceful curettage to remove tophus particles embedded in the thin attenuated skin flap may compromise blood circulation and cause additional complications.^{9,10} Earlier, we reported the first use of a soft-tissue shaver for excavating tophus from the extremities.^{11,12} The soft-tissue shaver was originally designed for use in orthopaedic arthroscopy but has been used to perform functional endoscopic sinus surgery since 1994.¹³ The device was used for all tophus surgeries performed in this series study. The timing for surgical intervention and refinements in the shaving technique are discussed later.

Materials and methods

This study retrospectively analysed 147 surgical procedures performed in 108 patients from November 2000 to July 2010 at a single hospital to treat patients' chronic tophus deposits involving the extremities. Data collection included length of hospital stay, culture reports, skin ulcers and blood laboratory data.

The surgical technique was performed as described previously.^{11,12} One or two 5-mm skin incisions were made to enable easy access to each tophus mass. When making

these incisions, the surgeon was careful to avoid interrupting the blood vessels or injuring underlying vital structures such as nerves or tendons. A tourniquet was used to minimise intra-operative blood loss. After the skin incision was made, a curette was inserted to remove chalky materials for pathological study and also to create a working cavity for the shaver (Figure 1). In our experience, a bottom approach to the tophus lesion is preferable. The shaver (Conmed Linvatec; Largo, FL, USA) used to remove the tophaceous tissue had a self-irrigating function (Figure 2). The powered shaver system includes a disposable shaver tip, hand-piece, suction-irrigation system and foot pedal. An oscillating inner blade rotating at 3000 rpm enables precise debridement of the tophus lesion. The tophus debris is extracted through the tip-side port of the outer cannula. For safety reasons, less experienced surgeons should maintain the tip-side port upward to prevent accidental trauma to surrounding structures. Although the shaver can cut in a multidirectional fashion, the surgeons require constant bimanual palpation of the tophus mass during shaving, so that the operator can estimate the mass removed by the shaver.

The solubility of urate is markedly temperature dependent and increases two fold when temperature is increased to between 25 and 37 °C.¹¹ Warm (37 °C) saline solution was connected to the irrigation system to avoid obstructing the shaver tip. After shaving, warm saline was used to irrigate the tophus cavity, and one curette was inserted to check for residual tophus particles. In patients with multiple tophus lesions, the infected tophus sinus was treated last to reduce the risk of intra-operative contamination. This shaver-assisted technique enabled removal of a tophus



Figure 1 Two 5 mm skin incision were made for easy approach to the mass. These incisions must prevent interruption of the underlying vital structures such as vessels, nerve or tendons. One curette was inserted first to dig out the chalky materials for pathologic examination as well as to create a working cavity for the shaver.

Download English Version:

<https://daneshyari.com/en/article/6214654>

Download Persian Version:

<https://daneshyari.com/article/6214654>

[Daneshyari.com](https://daneshyari.com)