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ROLE FOR SURGICAL EXCISION OF GOUTY TOPHI IN IMPROVING HAND FUNCTION.

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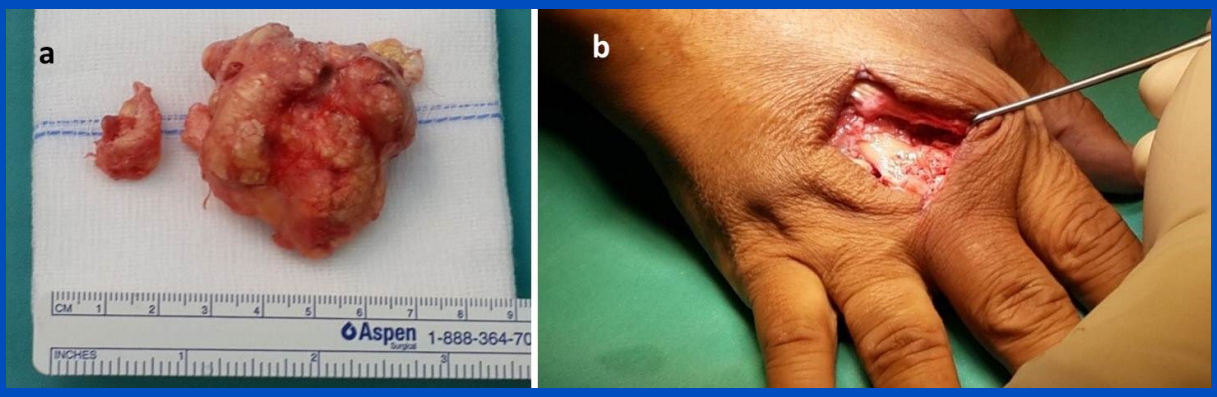

ABSTRACT

Gout is a painful disorder of purine degradation with resulting hyperuricemia leading deposition of monosodium urate crystals in major joints of the lower limbs, classically the first metatarsophalangeal joint or better known as podagral. Gout may also leads to other systemic complications such as nephrolithiasis, renal impairment and involvement of other part of connective tissue. Pharmacological therapy with dietary avoidance of certain food is the main stay of treatment. Surgery is only indicated for the patients with joints or cutaneous deposits of urate crystal causing significant restriction of hand or limb function, skin ulceration or for compressive peripheral neuropathy. We report a case of a 61 year old Malay gentleman, who presented with polyarticular tophaceous gouty arthritis affecting both of his upper limbs, for which surgery with excision of the tophaceous gouty deposit led to improvement in his right hand function.

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ABSTRACT

Gout is a painful disorder of purine degradation with resulting hyperuricemia leading deposition of monosodium urate crystals in major joints of the lower limbs, classically the first metatarsophalangeal joint or better known as podagral. Gout may also leads to other systemic complications such as nephrolithiasis, renal impairment and involvement of other part of connective tissue. Pharmacological therapy with dietary avoidance of certain food is the main stay of treatment. Surgery is only indicated for the patients with joints or cutaneous deposits of urate crystal causing significant restriction of hand or limb function, skin ulceration or for compressive peripheral neuropathy. We report a case of a 61 year old Malay gentleman, who presented with polyarticular tophaceous gouty arthritis affecting both of his upper limbs, for which surgery with excision of the tophaceous gouty deposit led to improvement in his right hand function.

Key words: Acquired hand deformities, Gout, Gouty arthritis, Surgery, Uric acid.

INTRODUCTION

Gout is a metabolic disorder of purine degradation pathway associated with an increased concentration of uric acid in the blood. Development of gout is essentially due to hyperuricaemia. Diagnosis is made when serum uric acid level is above 7.0 mg/dL (0.42 mmol/L) and 6.0 mg/dL (0.36 mmol/L) in men and women respectively.[1] In the beginning of its presentation it is usually characterized painful acute monoarticular arthritis, classically over the first metatarsophalangeal joint also known as podagra.[1, 2] Untreated, gout progresses with osseous and subcutaneous urate deposits in multiple joints causing joint deformity with persistence low grade symptoms.[3] Patients with advanced changes may be seriously handicapped due to the gradual increase in the size of the deposits, especially if the upper limbs are also affected.[2, 4] Large deposits of urate crystals can potential cause pressure erosion of the cortical surface of the bone causing weakness and fractures. Tzeng et al demonstrated that gout can potentially increase the overall risks of spine or lower limbs fractures, more often in women. Fractures can happens when there is an initial crack occurring in response to certain amount of load and stress acting on the bone repeatedly.[6]

Pharmacological therapy with allopurinol to reduce plasma uric acid level with dietary avoidance of certain food is the main stay of treatment. Surgery is only indicated for patients with significant tendon and joint re-

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striction from large tochi deposits, or skin ulceration as result of ruptured tophi or compressive peripheral neuropathy.[2,4,7] We report a case of a 61 year old Malay gentleman, who presented with polyarticular tophaceous gouty arthritis affecting both of his upper and lower limbs, for which surgery with excision of the tophi deposit led to improvement in his right hand function.

CASE REPORT

A 61 year-old Malay gentleman with gouty arthritis for the past 11 years was referred to our Department for consideration of surgery to remove large tophi from his right hand which was restricting his hand function. He has underlying diabetes mellitus and hypertension is currently on Allopurinol 100mg daily with occasional acute episodes, which resolved with NSAIDs (Diclofenac Sodium 50mg TDS) and Colchicine (0.6mg TDS). However over the period of time, he develops multiple tophi which had gotten worsen over the past 1 year involving his upper and lower limbs but more symptomatic in his right hand with functional restriction. As he is a right hand dominant person, this has affected his daily activity with severe restriction of his right hand function in which he has difficulty in achieving full flexion of the middle finger and gripping of objects.

On examination of his right hand, there was a large tophi over the dorsum aspects of the hand over the first, second and third metacarpophalangeal joint. Peripheral nerves and circulation was intact with no sign of infection. Movement of the thumb, index and middle finger was restricted especially during flexion.

Decision for surgical excision of the largest tophi over the dorsum of the hand was discussed with the patient in order to improve his right hand function. He underwent elective surgical excision under general

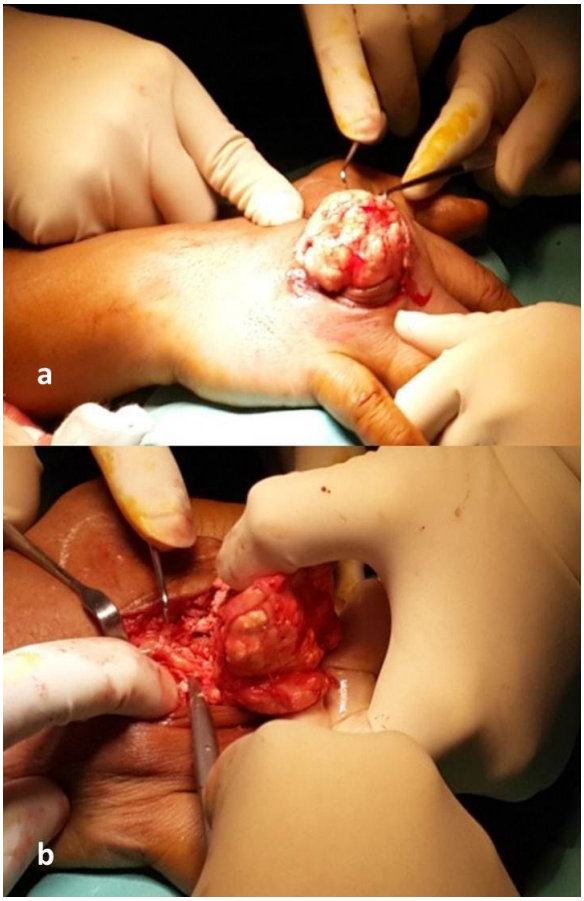

Figure 1: (a) showing a large 4 x 3cm tophi over the 2nd to 3rd metacarpophalangeal joints, (b) tophi noted to be attached to the underlying extensor digitorum tendon.

anaesthesia. Intraoperatively, the large tophi measuring 4 x 3cm (Figure 1) was found to be attached to the underlying extensor digitorum tendon mainly of the middle finger and extending over the radial half of the index finger. The tophi was completedly excised successfully with the tendon intact (Figure 2). Postoperatively, patient recovered uneventfully and was discharged on post-operative day 14. Patient was started on rehabilitation regime for range of motion and strengthening exercises. At 6 weeks follow up, patient reported regaining full flexion of his fingers and thumb of his right hand and was able to grip objects better. After 4 months follow up, patient was fully satisfied with the outcome of the surgery and intended to have further surgery to remove the other tophi deposits in his upper limbs.

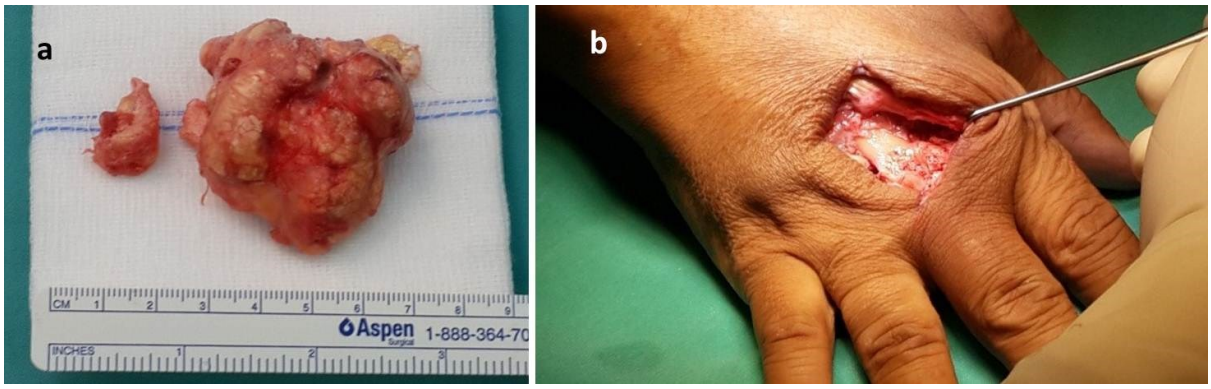

Figure 2: (a) Tophi measuring 4 x 3cm completedly excised with underlying extensor digitorum tendon intact

DISCUSSION

Gout was medically recognised as early as the Hippocrates period.[1,7] It is characterized by joint pain with elevation of serum uric acid levels resulting from impaired renal uric acid excretion. High uric acid level can be attributed to genetic predisposition, certain uric acid elevating medication and dietary factors.[3] Needle shaped crystal of monosodium urate from super saturated fluids are deposited in tissues resulting in gouty arthritis, formation of tophi and uric acid nephrolithiasis which may lead to nephropathy. Tophi formation usually occurs over a mean period of 10 years.[2,4] Previously disease joints such as osteoarthritis in the fingers predisposes to increase risks of crystal deposition.[8] Tophi are present commonly as subcutaneous, sharply circumscribed nodular collection of monosodium urate crystals at periarticular site in and around bursae and in soft tissue overlying tendon and cartilage. Skin overlying joints and helix of the ears are the most common sites involved.[2,3] These are also found, to a lesser extent, in eyes, nose, larynx, breast and heart valves, penis, spinal cord, tongue and epiglottis. The overall ratio affecting both genders was 3.6 male versus 1 female patient.[7]

The use of surgical intervention for gout goes way back to the time of Hippocrates, when relief from severe pain was provided by burning the painful tophi with crude flax.[7] Before the introduction of effective urate lowering medical therapy in the management of gout, surgery was the treatment of choice for removal of large deposits of sodium urate which was mainly for cosmetic purpose.[1,7] The role of surgery for gout is now is more limited to the complications of the tophi which include infection, joint deformity and persistent pain.[2,4] Tophaceous gout may cause compression of the peripheral nerves, the cauda equina or the spinal cord in which prompt surgical intervention is required to prevent irreversible neurological impairment.[4,9,10]

Decision for surgery has to be made accordingly and many of those are made at advance stages of the disease. This could potentially be challenging as debulking and curettage of large tophi may prolonged the surgery and hence require general anaesthesia rather than regional anaesthetic block.[1] The chronicity of the condition would have likely resulted in the crystals invading into the surrounding structures such as the tendons which make manual curettage difficult and ineffective. Large tophi can cause local ischemia to overlying skin and may result in necrosis of the incised skin, which can further be site of infection to occur. As many as 53% of patients who underwent surgical removal of chronic advanced-stage gouty tophi developed complications of delayed wound healing.

Pre-emptive surgery offers better postoperative wound healing and recovery of

joints functions as there is minimal skin or tendon infiltration. Recurrence of tophi deposit is unpredictable. Few clinical trials.[2,4,7,11] have addressed the long term efficacy of surgery in the management of tophaceous gout disease. Generally, it is recommended that before surgery is considered, urate-lowering medical therapy should be optimized to control the progress of the disease.

CONCLUSION

Gouty tophi of hand is debilitating as it impedes normal hand function besides being cosmetically unappealing. Once tophi developed and causing difficulties, medical treatment alone may not be adequate to eradicate the tophi. Surgical excision would be the treatment of choice especially for large tophi over joints that limit joint motion or if the tophi ruptured or becomes infected. Early pre-emptive surgical intervention may help to preserve joint function especially in the hands and allow for better wound healing and post-operative recovery.

Declaration:

The authors declare no financial or other conflict of interest in preparing this manuscript and consent has been obtained from the patient to publish these images and case report.

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