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CASE REPORT

CASE REPORT MYCETOMA FOOT: A RECONSTRUCTIVE CHALLENGE

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ABSTRACT

Introduction: Plastic and reconstructive surgery is instrumental in salvaging and saving limbs from getting amputated in many deeper plane infections and crush injuries, one such infective disease is Mycetoma foot. Mycetoma foot is a chronic granulomatousdisease caused either by fungi or bacteria. The disease is endemic in many states of India and is a slowly progressive but destructive nature which is managed late because of the dilemma of diagnosis and it needs both surgical and pharmacotherapy management to beat the disease. If not diagnosed at all, leads to amputation of the involved part. **Case Report:** Here we are presenting a case report of Mycetoma foot in a 40year old male, North India. Patient had the skin lesion over dorsum of right foot,which progressed over plantar with in18months and was continuously progressing in deeper planes and was diagnosed incorrectly. Patient was diagnosed with Mycetoma right foot because of strict clinical suspicion and proven with biopsy. Radical debridement was done followed by reconstruction with free Latissimus Dorsi muscle flap cover and targeted pharmacotherapy started. **Conclusion:** Mycetoma foot is a reconstructive challenge because of late diagnosis and involvement of deeper tissue like foot bones. Most of the patients are suggested amputation under such circumstances. Salvaging limb in this condition needs microvascular free tissue transfer with simultaneous long pharmacotherapy. Regular follow up is the rule for long post-operative period.

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INTRODUCTION

Mycetoma is a chronic infectious disease of the skin, subcutaneous tissue and bone caused by aerobic and anaerobic bacteria (Actinomycetoma) and fungi (Eumycetoma) which are represented by the grains. The grains are microaggregation of causative agents i.e. filamentous bacterial clonies for actinomycetoma and fungal Hyphae for Eumycetoma. In 80% cases the disease affects lower limb, (1). Geographically mycetoma foot disease is seen in tropical and sub-tropical countries of world. In India, the disease is widely variated, as Eumycetoma which is common in Rajasthan and as actinomycetoma which is common in Andhra Pradesh, Punjab, Madhya Pradesh, Tamil Nadu and West Bengal,(2). Mycetoma foot disease is a diagnostic and reconstructive challenge for plastic surgeons and also needs the assisstance of long term targeted pharmacotherapy and may need radiation therapy(3). Confirmation of diagnosis comes with the biopsy from the lesion which in our case comes after radical excision of the lesion from right foot,(4). The presented case report reveals the challenges that were met during diagnosis, treatment and follow up of the patient and also the importance of microvascular free tissue transfer in saving the limb from amputation and reconstruction of such defects.

CASE REPORT

A 40 year old male from North India, presented to our hospital with a history of generalized swelling of the right foot from 1.5 years. The patient gives history of walking bare foot for long distance 1.5 years back after which patient complaint of appearance of single nodule over the dorsum of the foot and was followed by few more nodules subsequently over the plantar aspect. These lesions eventually burst to develop sinuses with serous discharge and yellow colored granules (grains). In 3 months patient developed multiple sinuses over the right foot and were associated with dark pigmentation and pain leading to difficulty in walking. On initial consultation was diagnosed with cellulitis and was put on IV antibiotics. Swelling and redness decreased within 5 days and discharged on oral medications but within a 2 week patient presents with right foot swelling, multiple discharging sinuses with pustular discharge and yellow granules. Patient shown to multiple physicians and surgeons but was diagnosed incorrectly. Patient then came to our hospital, with lesion measuring 22.5cmX 10.5cm, extending over dorsal and plantar region, where he was suspected as a case of advanced mycetoma foot, non responsive to antibiotics. Routine investigations, culture & sensitivity of discharge sent, FNAC taken, 3D CT with CECT

Fig 1a. CECT showing osteomyelitis of 4th and 5th toe Axial section

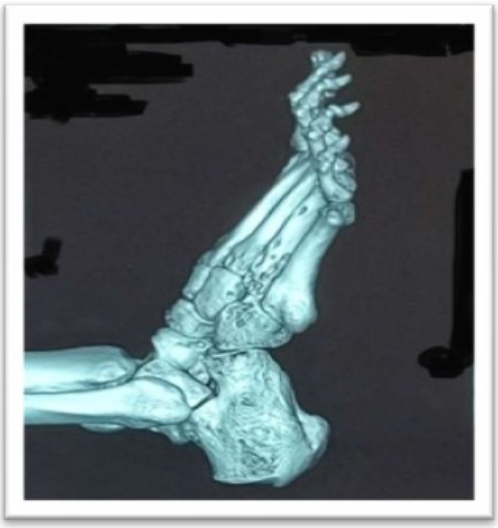

Fig 1b. 3D CT Foot showing osteomyelitic cuboid bone

right foot was done and targeted pharmacotherapy started. CECT of right foot shows evidence of advancedmycetoma foot, which has involved the 4th and 5thmetatarsalbone and anterior part of body of cuboid. Patient taken for debridement of the lesion and radical debridement done with nibbling of the osteomyelitic bone, whole sample sent for biopsy and KOH mount. VAC applied over the debrided wound for 2 weeks (2 VACs 7 days each). FNAC report revealed Madura Mycosis and biopsy shows Eumycetoma. Post confirmation of biopsy reconstruction of right foot was planned with free microvascular tissue transfer using large muscle flap.

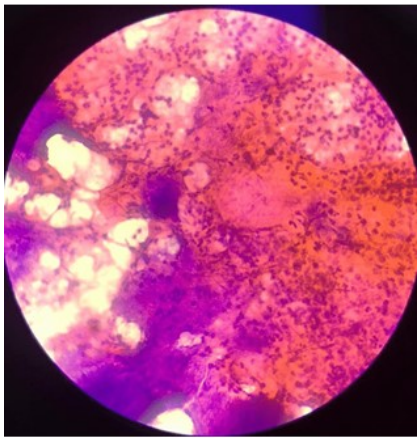

Fig 2. Cytosmears suggestive of Madura mycosis

Reconstruction done by using free Latissimus dorsi muscle flap with SSG cover, anastomosis of Thoracodorsal artery E---- EPosterior tibial artery and 1 venae commitantes with 1 venae commitantes. Post operatively standard protocol of flap monitoring and dressing was followed. Patient was immobilized for 4 weeks and mobilized gradually with pressure garment. Follow up of patient done weekly for 8 weeks, then every fortnight for 2 months, monthly for a year and yearly/SOS thereafter.Long termpharmacotherapy with Tab. Trimethoprim-Sulfamethoxazole BD for 6 months and Tab. Itraconazole 200mg BD for 9 months. 1 year post operatively biopsy was taken from the flap area which came to be normal. Patient presently has no complaints in walking and there are no signs of recurrence of lesion.

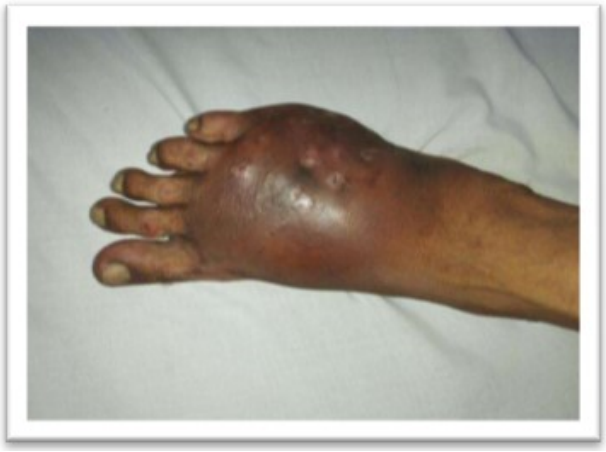

Fig. 2a. Dorsum of Foot With Active Nodules

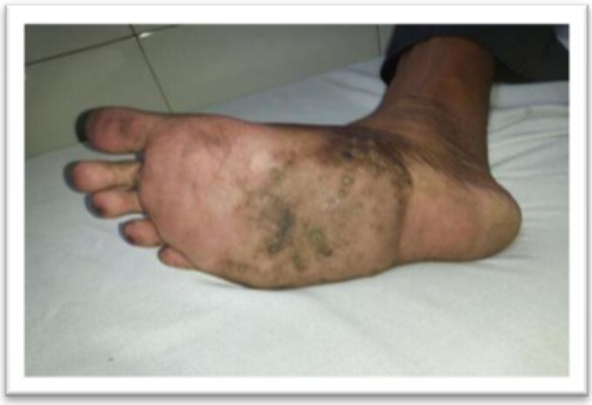

Fig. 2b. Planter reigon of foot with healed nodule

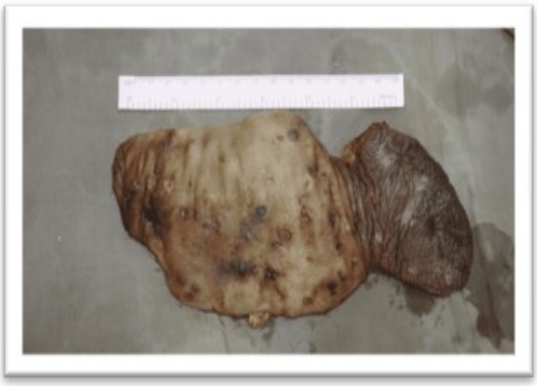

Fig 3a. Excised portion of foot disease outer surface

Fig 3b. Excised portion of foot disease inner surface

Fig 4a . Post excision plantar suface

Fig 4b. Post excision dorsal surface

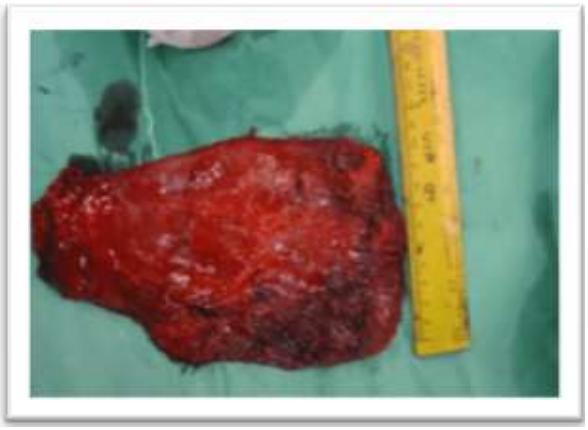

Fig 5a. Harvested Latissimus dorsi muscle flap

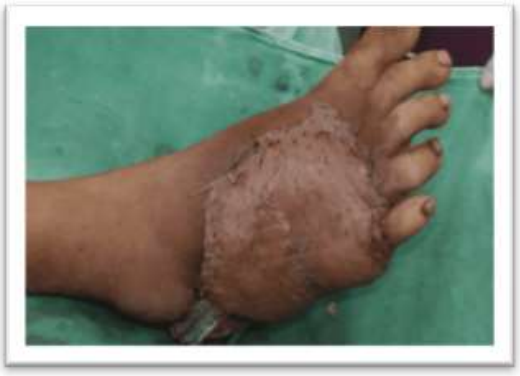

Fig 5b. Final insettingLattisimusdorsi muscle flap on foot

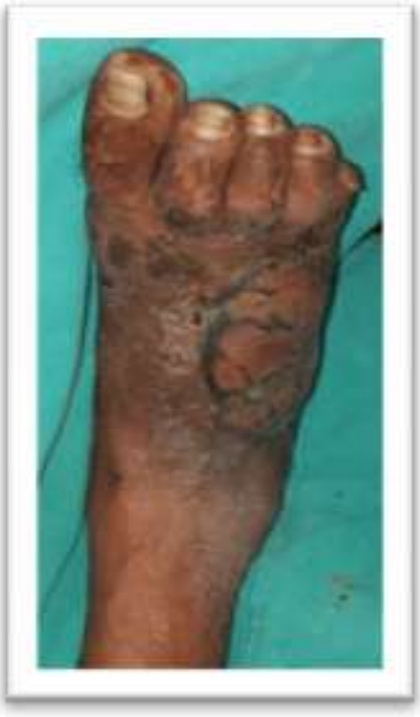

Fig 6a. Follow up 1 year dorsal View

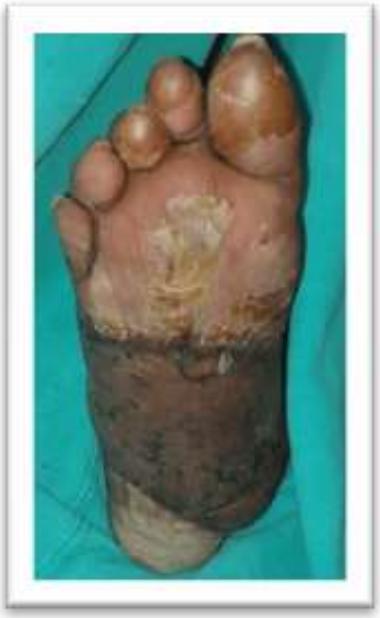

Fig 6b. Follow up 1 year plantar view

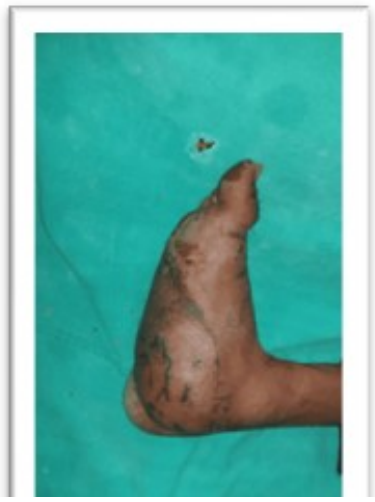

Fig 6c. Follow up 1 year lateral

DISCUSSION

Free microvascular transfer of muscle flap is vital as the local donor flaps are minimal for foot and lower 1/3rd leg and muscle flaps are further limited that too after radical debridement with large defects,(10). Mycetoma foot starts with the involvement of skin and sub cutaneous tissue but with long standing infection it can involve the underlying fascia, muscle and bone,(6). The disease is painless because of which patient presents late. Lesion can be painful with superficial bacterial infection but due to diagnostic dilemma patient again presents late, leading to invasion into deeper plane resulting in deformity of foot or amputation of the part,(7). Also the pharmacotherapy for the lesion went on for long period and many patients tend to drop out from the treatment resulting in recurrence of the lesion,(8). The challenge regarding treatment drop out is addressed by strict follow up and good counselling of the patient. Diagnosis of the disease is of upmost importance, clinical suspicion holds the key but confirmation of the diagnosis is always needed to start the targeted drugs, as Mycetoma foot can have fungal pathology (Eumycetoma) and also it may have bacteria (Actinomycetoma) pathology. Biopsy is gold standard for making the diagnosis but to start the empirical treatment of Mycetoma foot one needs to have a non-invasive diagnostic tool which is best serve by CECT,(4,11)

Amputation rate inmycetoma foot infection is 25- 50% according to the litreture . According to a study in sudan for a total of 1654 patients, 584 underwent surgical management out of which 71 patients underwent amputation at different levels. Most commonly below knee amputation and amputation of toes were done. Wide excision was done under surgical management followed by primary closure, local flap/graft reconstruction or amputation, choice of which was done according to size of lesion, bony involvement and feasibility of primary closure. If size of lesion (<5cm),without bone involvement, primary closure was done. Lesions 5-10 cm without bone involvement managed with graft/flap cover. Amputation was preferred choice in patients with lesion >10cm involving bone and/or with deep secondary infection or a disabled patient. In this study 32 patients had recurrence in 18 months follow up,(13). The Mycetoma research center has developed a guideline for amputationin patients with

- Massive disease with massive bone distruction
- Severe secondary bacterial infection not responding to antibiotics with evidence of severe sepsis.
- Massive disease with no response to prolonged medical treatment.
- Severe drug side effects
- Patient preference
- Long disease duration,(9).

For Actinomycetomalong-term antimicrobial combination therapy and for Eumycetoma long-term antifungal treatment with surgical intervention is employed.Sulfamethoxazole with trimethoprim (co-trimoxazole) is the gold standard, and is used as first line therapy either alone or in combination for Actinomycetoma andItraconazole is the first line antifungal treatment employed for Eumycetoma. The aim of drug therapy is reduction of size of the lesion by local fibrosis ,(12). In our case report,CECT shows bony involvement so patient was put on IV Augmentin 1.2 mg TDS with oral Trimethoprim-Sulfamethoxazole (8mg/kg/day - 40mg/kg/day respectively in 2 divided doses) with oral Itraconazole 200mg BD as diagnosis favours of Eumycetomaand after biopsy report of Eumycetoma patient was put on oral Itraconazole 200mg BD for next 6 months.

In contrary to above study we stress on reconstructing the limb even in patients with large lesion involving bone or deeper tissues. To do so free muscle transfer holds the key and swift diagnosis, long term targeted pharmacotherapy and strict follow up protocol has pivotal role, (9). Literature has described only one case report of reconstruction with free tissue transfer with tensor fascia lata musculocutaneous flap, (10). Reconstructive surgery for mycetoma foot performed world wide with satisfactory outcomes .

In our case, patient presents undiagnosed with history of disease since 1.5 years, with lesion of size 22.5cmX10.5cm involving both dorsal and plantar surface of right foot with involvement of metatarsal and tarsal bones. If we would have went according to Mycetoma research centre guidelines, there is a clear indication for amputation of limb but microvascular free muscle transfer has given more than satisfactory result in this patient with no recurrence after 12 months follow up.

Surgical debridement with reconstruction in patients with Eumycetoma is needed because it tend to involve the deeper planes and vascularized muscle flap is good option as it provides with large surface area and it enables good penetration of drugs over the debrided area so as to eradicate any residual disease,(9). Many muscle flaps has been used like tensor fascia lata flap, gastrocnemius flap etc,(9). In our report, Latissimus dorsi muscle free flap has been used to cover the defect. LD muscle flap chosen for reconstruction, as the defect involves both dorsal and plantar surface of foot, it provides with large surface area and being flat muscle was easy to contour according to the defect, (9).

CONCLUSION

Microvascular technique is significant for the reconstruction of post radical debridement of Mycetoma foot lesion, especially in case of Eumycetoma. Large muscle flaps are available for such purpose, which requires to be selected as per need.

Avoiding amputation in patients with deeper tissue involvement is challenging but is possible with the art of microsurgical vascularized tissue transfer. Four key steps in management involves, early diagnosis, long term pharmacotherapy, radical debridement, microvascular vascularized free muscle transfer. Follow up is a must and a protocol is advised.

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