# Maffucci Syndrome: A Case Report

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**ABSTRACT:**

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Maffucci syndrome is a rare congenital non-hereditary syndrome characterized by multiple enchondromas and vascular lesions, and an increased risk of several malignancies. In our report, a 29-year-old woman presented with many painless masses at the left upper extremity with a short left lower extremity for over 10 years. Physical examination revealed multiple vascular lesions at the left upper extremity and mild limb length discrepancy with left lower extremity shortening. The radiological study was compatible with venous malformations with probable enchondroma at the left upper extremity. Clinically, the patient was diagnosed with Maffucci syndrome. On the malignancy screening, mammography revealed a Breast Imaging-Reporting and Data System 3 (BI-RADS 3) mass which a bi-manual examination was recommended. In addition, a low dose (81 mg) daily aspirin has been prescribed for localized intravascular coagulopathy prophylaxis.

**Key words:** Maffucci syndrome, enchondroma, vascular lesion

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## Introduction

Maffucci syndrome is a congenital non-hereditary syndrome caused by mosaic mutations in *isocitrate dehydrogenase (IDH) 1 and 2* genes[1,2]. The clinical presentations include multiple enchondromas and vascular lesions. Patients with the syndrome also have an increased risk of several malignancies including cholangiocarcinoma, ovarian cancer, and other gliomas[3,4]. Moreover, the associated skeletal deformities may impair the patients' daily activities[5].

## Case Presentation

A 29-year-old woman presented with multiple painless masses at the left upper extremity which had existed for more than 10 years. The masses had been gradually enlarging. She denied any constitutional symptoms such as fever, weight loss, or loss of appetite. There was no apparent deformity at birth, and no other family members were affected. At 13 years old, the patient had difficulty walking and was diagnosed with leg length discrepancy with bone deformity in the left lower extremity. The condition was treated with a corrective osteotomy using an ilizarov apparatus. Clinical examination revealed multiple bluish nodules with a mixed cystic and rubbery consistency, located at the left upper extremity. The nodules were compressible on palpation, with no bruit or thrill. (Figure 1) The left lower extremity was relatively short.

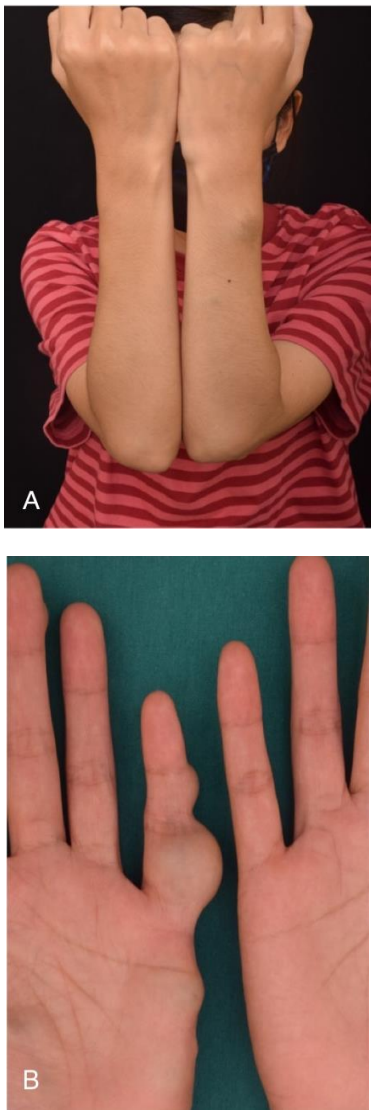


**Figure 1** Clinical characteristics of venous malformations at A) the left forearm and B) the palm and 5th digit of the left hand

A plain radiograph of the left upper extremity revealed multiple osteolytic lesions. (Figure 2) Additionally, the magnetic resonance angiography (MRA) study of the left upper extremity described 18 soft tissue lesions, consistent with venous

malformation, involving the left proximal and distal forearm. A lobulated marrow lesion was detected at the medial aspect of the left scapular spine, probably enchondroma. (Figure 3)

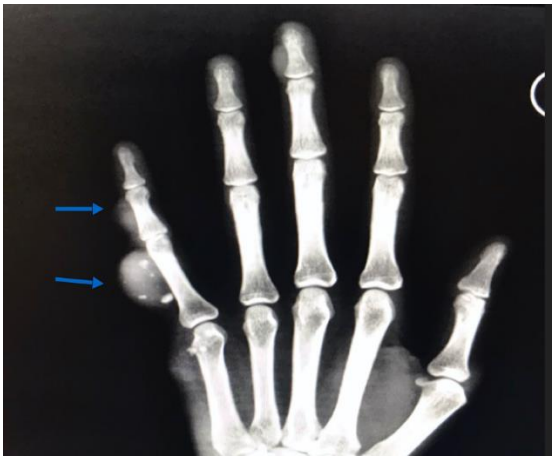

**Figure 2** A plain radiograph of the left hand shows multiple soft tissue masses

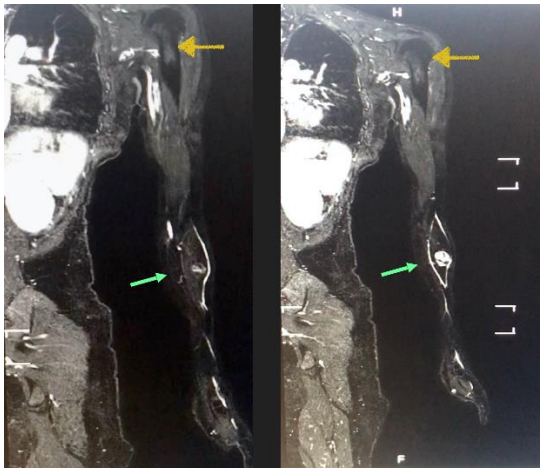

**Figure 3** Magnetic resonance angiography (MRA) of the left upper extremity demonstrated multiple soft tissue lesions, consistent with venous malformation

Since the patient was presented with multiple enchondromas and no other family members had similar symptoms, Ollier disease and Maffucci syndrome were in the differential diagnosis. However, the presence of vascular lesions suggested the clinical diagnosis of Maffucci syndrome[9]. The mammography revealed a Breast Imaging-Reporting and Data System 3 (BI-RADS 3) mass from the malignancy screening. As the patient had no other clinical signs and symptoms for malignancies, there were no further investigations but a clinical follow-up was planned. DNA sequencing from the tissue lesion was not performed due to financial issues. Additionally, because of an increased serum D-dimer level, despite normal serum fibrinogen level and coagulogram, a daily low dose (81 mg) of aspirin was prescribed as a prophylaxis of localized intravascular coagulopathy. The surveillance plan included a monthly clinical follow-up and the repeated mammography at 6 months. As the orthopedist diagnosed the enchondroma based on the MRA findings, a tissue biopsy was not performed. Consequently, the yearly MRA study of the left upper extremity and a plain radiograph of the other extremities were recommended.

## Discussion

Maffucci syndrome is a congenital non-hereditary syndrome with clinical signs and symptoms usually developing before puberty[5].

The affected person has no anomaly at birth, with normal intelligence[5]. No racial and gender predilections were reported. Skeletal lesions in Maffucci syndrome are described as dyschondroplasia originating in the metaphyseal region of the endochondral bones. Multiple enchondromas have predilect sites at the long bones of the extremities, and the phalanx is the most commonly-affected bone. In addition, interrupted skeletal growth during development may be responsible for deformed extremities[5]. The radiological characteristics of the extremities include multicentric radiolucent areas with eccentric protrusions, and abnormal mineralization with predominant thinning cortex and endosteal scalloping.

Typical cutaneous manifestations of the Maffucci syndrome are vascular malformation and lymphangioma[2]. Vascular malformation is clinically recognized as a bluish or a skin-colored nodule which most commonly affects the extremities. Phleboliths may be observed[8]. In comparison, spindle cell hemangioma, which is also commonly found in Maffucci syndrome, is often painful, aggressive, and devastating[6]. Histologically, the cutaneous nodules demonstrate combined features of a venous malformation and a vascular tumor.

The incidence of associated malignancies in Maffucci syndrome remains inconclusive; however, the reported incidence ranged from 23% to 100%[3]. Most common sites of malignancy included bone cartilage (e.g. chondrosarcoma), pancreas, ovary, and brain (e.g. astrocytoma)[3,4] Acute myeloid leukemia hepatobiliary tract malignancy and breast cancer were occasionally reported[4,9]. In patients with Maffucci syndrome, the skeletal deformities are typically characterized by leg length discrepancies, varus or valgus deformity of the lower extremities (knee and ankle), and increased pathologic fracture risk, so a multidisciplinary healthcare team, including orthopedists, dermatologists and physical therapists, is usually required for taking care of the patient[4].

For vascular lesion management, the surgeon suggested the therapeutic options of performing sclerotherapy, irradiation, or surgery, in this case; however, the patient denied any surgical interventions. In a recent study, the use of mTOR inhibitor (Sirolimus®) in combination with surgery was reported with a satisfactory outcome[6]. Furthermore, screening for malignancy transformation and evaluation of localized intravascular thrombosis are the essential managements for preventing other complications and reducing overall mortality.

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