



Autogenous Fibula Grafting of a Radial Defect Complicating Acute Hematogenous Osteomyelitis in An Infant

Authors

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Introduction

Osteomyelitis is an inflammation of bone caused by a pyogenic organism. Historically, osteomyelitis has been categorized as acute, subacute or chronic, with the presentation of each type based on the time of disease onset (i.e., occurrence of infection or injury). Acute osteomyelitis develops within two weeks after disease onset, subacute osteomyelitis within one to several months and chronic osteomyelitis after a few months. Because osteomyelitis is a complex disease state, various classification systems have emerged beyond the general categories of acute, sub acute and chronic. The Waldvogel classification system¹⁻³ divides osteomyelitis into the categories of hematogenous, contiguous and chronic.

The more recent Cierny-Mader staging system is based on the status of the disease process, not etiology, chronicity or other factors.⁴

Clinical Description

Acute hematogenous osteomyelitis occurs predominantly in children, with the metaphysis of long bones the most common location. Patients usually present within several days to one week after the onset of symptoms. In addition to local signs of inflammation and infection, patients have signs of systemic illness, including fever, irritability and lethargy. Typical clinical findings include tenderness over the involved bone and decreased range of motion in adjacent joints. The diagnosis of acute osteomyelitis can be established based on several specific clinical findings.

Acute osteomyelitis refers to an infection which develops and peaks over a relatively short period of time. In children, acute osteomyelitis, usually presents itself as pain in the affected bone, tenderness to pressure over the infected area, fever and chills

. Patients who develop osteomyelitis, due to spread from a nearby area of soft tissue infection, may only note poor healing of the original wound or infection^{6,7}

The diagnosis of osteomyelitis is based primarily on the clinical findings, with data from the initial history, physical examination and laboratory tests serving primarily as benchmarks against which treatment response is measured. Leukocytosis and elevations in the erythrocyte sedimentation rate and C-reactive protein level may be noted. Blood cultures are positive in up to one half of children with acute osteomyelitis. In osteomyelitis of the extremities, plain film radiography and bone scintigraphy remain the primary investigative tools^{8,9} Radiographic evidence of bone destruction by osteomyelitis may not appear until approximately two weeks after the onset of infection. The radiographs may reveal osteolysis,

periosteal reaction and sequestra (segments of necrotic bone separated from living bone by granulation tissue).⁸ A bone abscess found during the subacute or chronic stage of hematogenous osteomyelitis is known as a Brodie's abscess.

Case Report

19 months old female child R.P. sustained injury to right forearm 1 and half years ago and was treated by quack with local herbs and plaster. She developed developed infection of her right forearm 2 months later. She was referred to a higher centre and was treated for acute osteomyelitis with rest, antibiotics and other supportive treatment. Patient was infection free in 3 months time but there was complete osteolysis of radius bone except the proximal and distal end radius bone.



Manus hand deformity



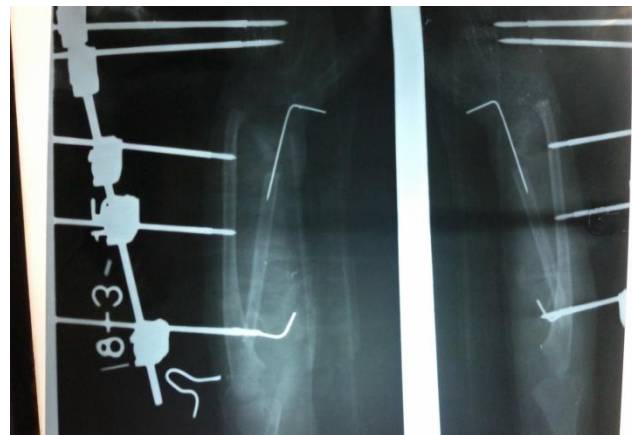
Pre Op x Ray showing loss of radial diaphysis



Manus hand deformity

She was examined at our centre. After a thorough review of her blood pictures, x rays and clinical examination patient was advised surgery autologous fibular grafting and JESS external fixator application for correction of manus valgus deformity. The surgery was performed in single

sitting after harvesting fibula from same side and implanting at the site of lost radius shaft & was fixed with k wires. The checked under image intensifier. Jess fixator was applied from medial side in ulna and medial 2 metacarpals to correct the Manus valgus deformity.



Post operative status with Jess fixator Post operative X ray showing fibula held by k wires

Patient had an uneventful post operative recovery and is fast progressing to recovery

Discussion

The emphasis of this case report is on the management of a radial defect after diaphysectomy complicating acute hematogenous osteomyelitis in a 19-month-old girl. An autogenous fibular graft was used to replace the defect of the radius. It was wedged between the proximal and distal radial fragment and fixed in

position by K wires. Recurrent osteomyelitis of the radius during infancy after initial hematogenous onset is rare. When encountered, this lesion may result in a segmental defect associated with limitation of forearm motion and progressive deformity. We consider the autogenous fibular graft to be especially suitable for replacing the radius for the following reasons:

it is firm enough for bridging, it has a corresponding caliber, and it can be obtained with adequate length. Within a few weeks (6 weeks) the fibular defect refills with new bone formation, provided that the periosteum has been tightly sutured. No interference with ankle growth was observed.

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