

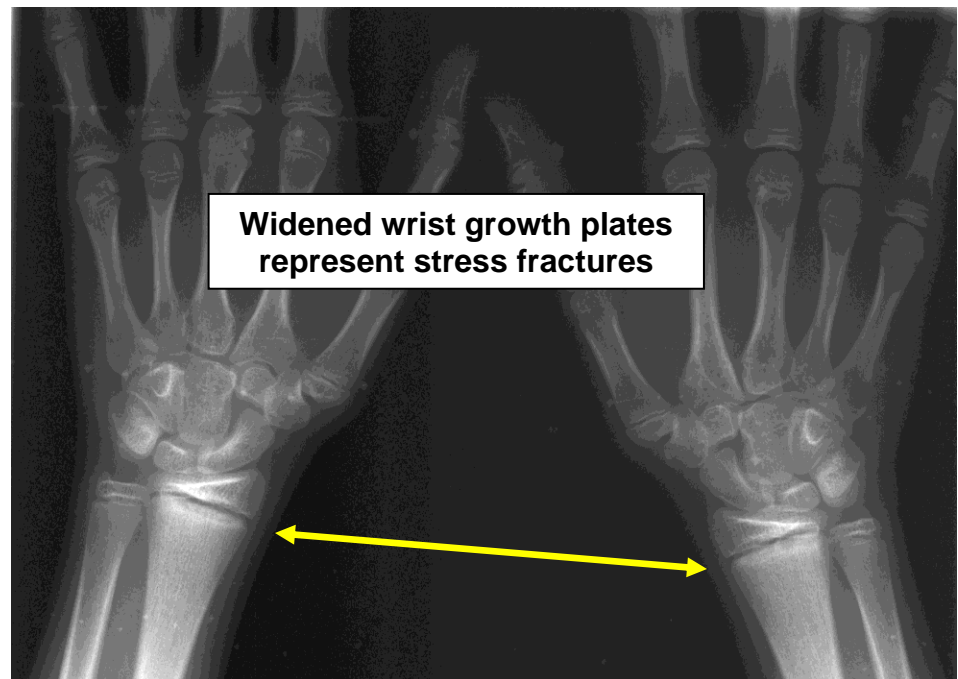
STRESS FRACTURES

The incidence of stress fractures in children and adolescents is increased with year-around sports involvement. Stress fractures are the result of excessive physical stress that interferes with the normal production of bone and bone remodeling. The stress is not severe enough to completely break the bone in two but it is of significant amount to result in abnormal bone formation and bone reorganization. The bones that are most commonly affected by stress fractures include the proximal tibia, the femoral neck, the femoral shaft, the distal femoral metaphysis, the medial malleolus, and the metatarsus.

While the absolute incidence of stress fractures is not known, the risk factors have been clearly defined. This may include individuals who are not physically fit or have small muscle mass and are at risk for a stress fracture. Risk factors also include a combination of mild muscle weakness in one muscle group, muscle tightness in another muscle group, and ligamentous laxity.

It is important that a pediatric orthopedic surgeon evaluate the child because of the potential that the pain and discomfort is associated with an infection, juvenile rheumatoid arthritis, a benign tumor, or even a malignancy. X-rays may be helpful in the identification of a stress fracture.

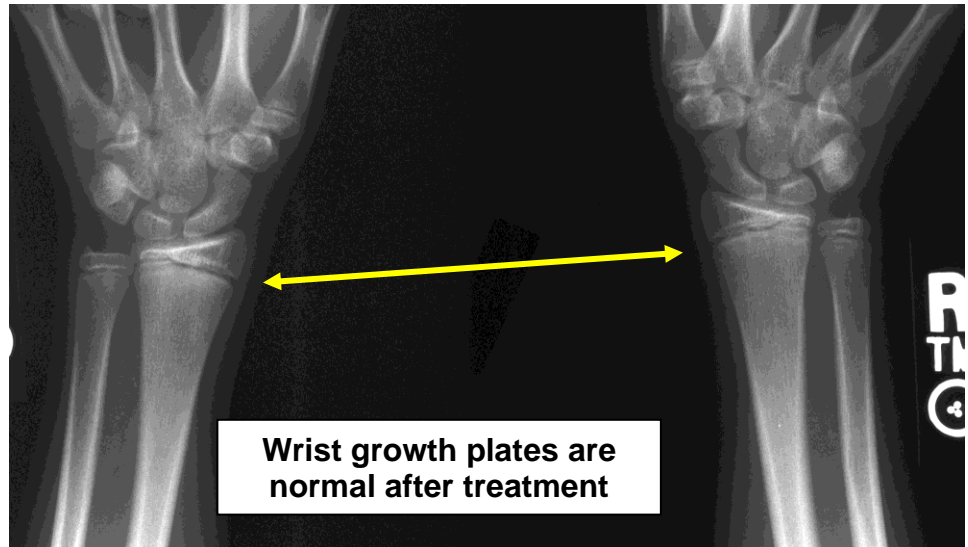
The x-rays will demonstrate new bone formation that is in the area where the bone has been damaged.



Bone scans may involve the injection of a technetium material that may also help diagnose stress fractures. The technetium is concentrated in areas of recent bone injury or abnormal bone turnover. However bone scans cannot differentiate between a stress fracture, infection, or tumor. MRIs have been more helpful in terms of differentiating stress fractures from infection and cancer and are more likely to be used in equivocal cases.



The management of chronic stress fracture depends on the location, severity of the symptoms, and age of the patient. Most patients have not yet completed their hormonal growth spurt and due to inherent muscle weakness are at greater risk for a fracture. Deficiency of 25-OH Vitamin D3 may also contribute to the poor healing and must be corrected. Most patients respond well to cessation of vigorous running activities or gymnastic-type events. Cast immobilization or splinting may be required, and resumption of normal activities does not occur until the x-rays and clinical exam are now normal.



In rare individuals the stress fractures fail to heal. Operative treatment may be combined with bone grafting to that area and internal fixation of the damaged bone to try and promote healing. Return to sports is an issue that the parent and child will have to consider seriously after the stress fracture has healed. Obviously the safeguards from mother nature and the training schedule did not work to the child's advantage. Modification or elimination of inciting causes and better attention to training methods may be required in order to allow the child to experience that sports activity again.



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