

Osteoporosis

Osteoporosis is a disease characterized by porous bones and a reduced bone mass. The associated structural changes predispose the bone to fracture. The most common forms are senile and postmenopausal osteoporosis, in which the loss of bone mass makes the skeleton vulnerable to fractures. Factors involved in the pathogenesis of osteoporosis include (1) **age-related changes** in bone **cells and** matrix have a strong impact on bone metabolism, (2) **reduced physical activity** increases the rate of bone loss because mechanical forces stimulate normal bone remodeling, (3) **genetic factors** are also important, (4) the body's **calcium nutritional state** is important, (5) **hormonal influences** — postmenopausal osteoporosis is characterized by a hormone-dependent acceleration of bone loss that occurs during the decade after menopause. **Estrogen deficiency** plays a major role in this phenomenon.

Osteoarthritis (*aka degenerative joint disease*) is the most common type of joint disease. It is characterized by the **progressive erosion of articular cartilage**. The term osteoarthritis implies an inflammatory disease; however, even though inflammatory cells may be present (*usually in small numbers*), osteoarthritis is considered to be an intrinsic disease of cartilage in which biochemical and metabolic alterations in individuals with genetic susceptibility result in its breakdown. During the stages of osteoarthritis dislodged pieces of cartilage and subchondral bone tumble into the joint, forming loose bodies (**joint mice**). The exposed subchondral bone plate becomes the new articular surface, and friction with the opposing degenerated articular surface smooths and burnishes the exposed bone, giving it the appearance of polished ivory (**bone eburnation**). **Note: Osteophytes** (*bony spurs*) can form at the distal interphalangeal joints (**Heberden nodes**) or at the proximal interphalangeal joints (**Bouchard nodes**).



1. **Osteogenesis imperfecta** (*or brittle bone disease*) is an autosomal dominant disorder characterized by multiple fractures with minimal trauma. It is caused by mutations in either of the genes that code for type I collagen. The **blue sclerae**, hearing loss, and dental abnormalities are characteristic. The teeth are poor because of malformation of dentin (*dentinogenesis imperfecta*).
2. **Myasthenia gravis** is an autoimmune disorder caused by autoantibodies to postsynaptic acetylcholine receptors of the neuromuscular junction. The disease commonly presents as ptosis, diplopia, and difficulty chewing, speaking, or swallowing.