DEFINITION

1. **Slipped Femoral Epiphysis** is the condition which occurs when the head of the femur is displaced from the shaft whilst it is still an epiphysis. The displacement is usually backwards and downwards leading to mis-alignment of the head and the shaft of the femur and may lead to osteoarthritic changes in the joint during adult life.

2. **Epiphysis** is the term applied to the end of a long bone during the growing period while it is still attached to the shaft by cartilage (usually in the form of a plate). When growth is complete the cartilaginous plate becomes bone, the epiphysis becoming one with the shaft. Growth is usually complete by the age of 18 years and, consequently, slipped femoral epiphysis only occurs before the age of 18 years.

CLINICAL MANIFESTATIONS

3. The characteristic symptoms are limp of spontaneous onset and pain which often radiates to the knee. The severity of these symptoms and the speed with which they develop depend upon the severity and acuteness of the slip.

AETIOLOGY

4. The fact of the slip results from a weakening of the union between the epiphysis and the femoral neck together with shearing strains occurring at this site. There are shearing strains present in the normal acts of standing and walking.

5. There is seldom any history of preceding illness or constitutional disturbance.

6. Occasionally there is a history of a fall or a blow to the hip some time before. In many such cases, however, the trauma has been trivial and not infrequently the history is elicited that there has been disturbance in the affected hip even before the injury.

7. The condition commonly occurs between the ages of 10 and 16 years (this being the period when the capital epiphysis is actively growing) and is more common in males. It is not unusual for the condition to be bilateral and the left hip is more commonly affected than the right.

8. It has been suggested that the reason for the failure of maturity of the cartilage is hormonal.

    8.1. It is well recorded in animals that a variety of hormone agents will weaken or change the histological appearance of the epiphyseal plate.

    8.2. Slipping of an epiphysis will only occur while the growth plate remains open, growth and maturation of the cartilage plate depending on hormonal factors viz. growth hormone, thyroid hormone and the sex hormones.

8.3. It has been observed that epiphyses tend to slip at times of fast growth and in certain types of individuals (e.g. adiposogenital syndrome) or in tall thin children, thus suggesting hormonal influence.

8.4. It has been shown in rats that growth hormone increased the thickness of epiphyseal plates which thus required less force to cause a slip and oestrogen treatment led to thinner, more mature plates which required more force to cause a slip.

8.5. There are, however, no human studies to support any theory of a hormonal basis for slipping.

9. The epiphyseal line is said to be the weakest part of the normal adolescent bone and many consider the condition of slipped femoral epiphysis to be a purely traumatic separation of a normal epiphysis. Others have stated that it is unlikely that trauma can displace a normal epiphysis.

10. It is probable that the condition arises as a result of a combination of a susceptible cartilage plate and the application of a shearing stress at the plate, the degree of stress necessary varying according to the degree of abnormality in the plate and the periosteum of the femoral neck.

CONCLUSION

11. Slipped Femoral Epiphysis is a condition which occurs during the period of active growth, that period ceasing by the age of 18 years. The condition is thus always present by the age of 18 years even though it may not necessarily manifest itself until later. Trauma may be involved although, frequently, no history of trauma is obtained other than the normal stresses of life. Osteoarthritis may develop in the affected joint with or without the application of further trauma.

REFERENCES

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