Valgus Slipped Capital Femoral Epiphysis - A Case Report

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Abstract

Slipped capital femoral epiphysis [SCFE] is most common hip problem in adolescent child and usually occurs around the growth spurt. There is a sheering force around the hip which favours the slip. However in the vast majority of cases the slip occurs in the varus direction. Valgus slipped capital femoral epiphysis as such is an uncommon entity. Not much literature has been published so far on this entity. This condition is not mentioned in standard orthopedics textbook. One such case report is presented over here along with the review of the available literature.

Introduction

The age incidence of SCFE is about 12 to 14 years in boys and about two years younger in girls. Predisposing factors include hypothyroidism, hypopituitarism, hypogonadism, renal rickets, rapid growth spurts, etc. The shape of the physis renders certain amount of stability to resist the sheer forces acting across it, along with the perichondral fibrocartilagenous ring complex around the physis itself, concave shape of the physis, and the interlocking effect of the zone of provisional ossification. The orientation of the growth plate is such that the physeal angle is at an acute angle. Due to the complex three dimensional anatomy the hip, it should be understood that, it is the femoral neck that displaces out from the capital femoral epiphysis that is held within the acetabulum by the ligamentum teres. The femoral neck gets displaced upwards and laterally, as a result of which the capital femoral epiphysis appears to have slipped into varus and posteriorly. Hence valgus tilt is rare and difficult to explain. Here is a presentation of a case of slipped capital femoral epiphysis, which has gone into valgus displacement, along with review of the available literature. A plausible hypothesis is also proposed.

Case report

A 22 year old female, presented with a two month H/O of pain in right hip joint without a history of any trauma, which get aggravated on walking for long distance and get relieved at rest. Prior to pain she walked normally and was an active child. The patient had history of craniopharyngioma for which she was treated surgically 11 yrs back (1996) following which patient took hormonal therapy for 6 years and stopped treatment on her own and since last 5 years patient is not taking any treatment for hypopituitarism. No h/o of menarche.

Examination revealed a slightly obese female with right lower limb in attitude of external rotation, with no tenderness over the right hip. There is 30 degree of external rotation deformity with limitation of flexion; adduction, abduction and internal rotation compared to opposite normal hip and movement are painful on terminal range of motion.

Blood investigations revealed features suggestive of hypopituitarism. HB 11.6g/dl, Sr. LH- 0.14, FSH-0.30, T3-2.05, T4-0.4, TSH-0.185, Sr.cortisol-1 and Sr. calcium- 8.9.

As the patient refused for surgery, Patient treated with traction for period of 6 week and started hormonal therapy for hypopituitarism. She continues to be followed regularly. At last review (1 year), she has pain free movement and no pain on walking.

Review of literature and discussion

Muller (1926)[1] is credited with the first description of Valgus SCFE. He described this case in pre-existing acetabular dysplasia. Finch and Roberts (2) reported two cases of Valgus SCFE. They treated both with traction and bed rest. Krishnan and Shelton (3) described another cases of Valgus SCFE, which was chronic in nature. This was treated with in situ pinning using Knowles pins. Skinner &Berkheimer -1978 (4) reported another case of valgus SCFE suggesting that preexisting coxa valga could have predisposed to its occurrence. Fahey and o’brain(5) reported an acute case of valgus SCFE in a
series of 10 cases of SCFE who was treated with
gentle traction and pinning.
Rotherman (6) described a case of valgus SCFE and
suggested horizontal physis as the possible etiology.
Chung et al performed cadaveric studies to determine
the shear forces that cause the failure of the capital
femoral epiphysis. They concluded that the forces
necessary to displace the capital femoral epiphysis
were within the physiological range of the force
generated in overweight children. Segal et al (7)
described 2 cases of valgus SCFE and suggested that
increased femoral anteversion may have role in
mechanical aetiology of Valgus SCFE.

Conclusion

There are several causes of valgus slipped capital
femoral epiphysis such as Coxa valga, Horizontal
physis, excessive femoral anteversion, acetabular
dysplasia, etc. In our case the most probable cause of
slipped capital femoral epiphysis is increased neck
shaft angle (155) and horizontal physis.
The usual anatomy of the proximal femur is one of an
inclined physis with the physical slope angle of about
30 degree, an anteverted femoral neck, and a
neck-shaft angle of 125-135 degree. Thus an
anteverted femoral neck with a horizontal physis would
favour valgus SCFE, whereas, a retroverted femoral
neck with an acute physical slope predisposes to the
much more common varus SCFE

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Illustrations

Illustration 1

**FIG. 1.** ANTERO POSTERIOR VIEW OF THE PELVIS WITH BOTH HIPS SHOWING VALGUS SLIPPED CAPITAL FEMORAL EPIPHYSIS ON THE RIGHT SIDE. NOTE THE INCREASED NECK SHAFT ANGLE THE NORMAL SIDE.

Illustration 2

**FIG. 2.** AXIAL VIEW OF BOTH HIPS SHOWING POSTERIOR SLIP OF THE CAPITAL FEMORAL EPIPHYSIS ON THE RIGHT SIDE.
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