INFANTILE QUADRICEPS CONTRACTURE

By
Dr John Ebnezar

Introduction

Knee joints have always been a marvel of engineering. Come to think of it every day from the moment we get up till we retire to bed we are on our knees. For we Indians high flexion activities like squatting is a way of life. If for some reasons muscles that bring about flexion and extension of the knees develop contractures severe disability develops. A straight and stiff knee due to quadriceps contracture is a disabled knee. Mercifully extension contractures are less than flexion contracture. Contracture in a muscle could be due to fibrosis or scarring that could cause shortness of the muscle with respect to bone and joints. This leads to limitation of joint movements and fixed deformities.

Causes

Quadriceps contracture could develop due to congenital or acquired causes. It is the latter that is more common. Now let us explore the causes:

Congenital

• Arthrogryposis multiplex congenita.
• Congenital genu recurvatum.
• Spina bifida.

Acquired

• Infants: Repeated injections into the quadriceps.
• Fracture of the femur with quadriceps adherent to the callus.
• Prolonged immobilization of the knee in a plaster cast following an injury to the lower limb.
• Injections and chronic osteomyelitis of the femur.
• Injury to the quadriceps muscles.

Post-Injection Quadriceps Contractures

This is the most common variety of acquired quadriceps contracture.

Important Past Clinical History

• These is usually always a history of severe infections in infancy like severe bronchopneumonia, septicemia, acute gastroenteritis, CHD, neonatal jaundice etc. Thus a careful evaluation of the past history is of extreme importance.
• For the above infections there is history of repeated intramuscular injections into the thigh.
• Over the formative years, the child slowly loses its ability to flex the knees.

Incriminating Infamous Injections

• Tetanus toxoid (Most common in Japan)
• Antibiotics
• Vitamin K
Ascorbic acid

Predisposing factors: The following factors contribute to the development of post-injection quadriceps contractures:
- Low socioeconomic conditions.
- Poor nutrition.
- Prolonged recumbency.

Clinical Features
- History of repeated intramuscular injection into the thigh.
- History of previous some diseases in the infancy.
- At birth both the knees appear normal.
- Gradual limitation of the flexion, both active and passive, is then noticed by the parents.
- In Asian countries, parents first become concerned when their child fails to squat.
- A child walks with a straight knee gait.

Presentation
Examination of the child carried out from the front, back and sides reveals the following:

From the front:
- Wasting of the front of the thigh.
- Absence of skin creases over the knee.
- Small patella.
- High riding patella.
- Forward inclination of the pelvis.
- Injection scars are visible in the mid-thigh. These become prominent on flexion of the knee.
- White patches and dimpling of the skin are due to subcutaneous atrophy.
- Genu recurvatum may be seen with growth and subluxation could result.
- Habitual dislocation is usually seen.
- In a dislocated position of the patella, knee flexion is full.

From the sides
- Exaggerated forward bending of the back.
- Prominent abdomen.
- Forward inclination of the pelvis.

Radiographs
The knee is normal in early stages. In the later stages the following changes may be seen (Fig. 32.37):
- Displacement of patella.
- High riding patella.
- Small patella.
- Flattening of the femoral condyles.
- Backward bending of the knee.
- Anterior dislocation of the tibia.
- Degenerative changes are seen in the joint late stages.

Treatment
Conservative Methods

Physiotherapy and stretching has very little in the management of established quadriceps contracture and is mentioned here only for completion.

Surgery

This is the treatment of choice. Surgical lengthening of the quadriceps can be done either proximally or distally. This is followed by a detailed post-operative rehabilitation protocol.