PARALYTIC KNEE RECURVATUM

Submitted for partial fulfillment

Of the master degree in orthopaedic surgery by:

Emad Abd Latif Abou Hogail

M. B. B. Ch.

Supervised by :

Prof. Dr. Mamdouh Zaki Saad

Prof. Of orthopedics – Ain Shams University

Prof. Dr. Ezzat Mohamed Kamel

Prof. Of orthopedics – Ain Shams University

Dr. Osama Youssef Rabie

Lecturer of orthopedics – Ain Shams University

Faculty of Medicine
Ain Sham University
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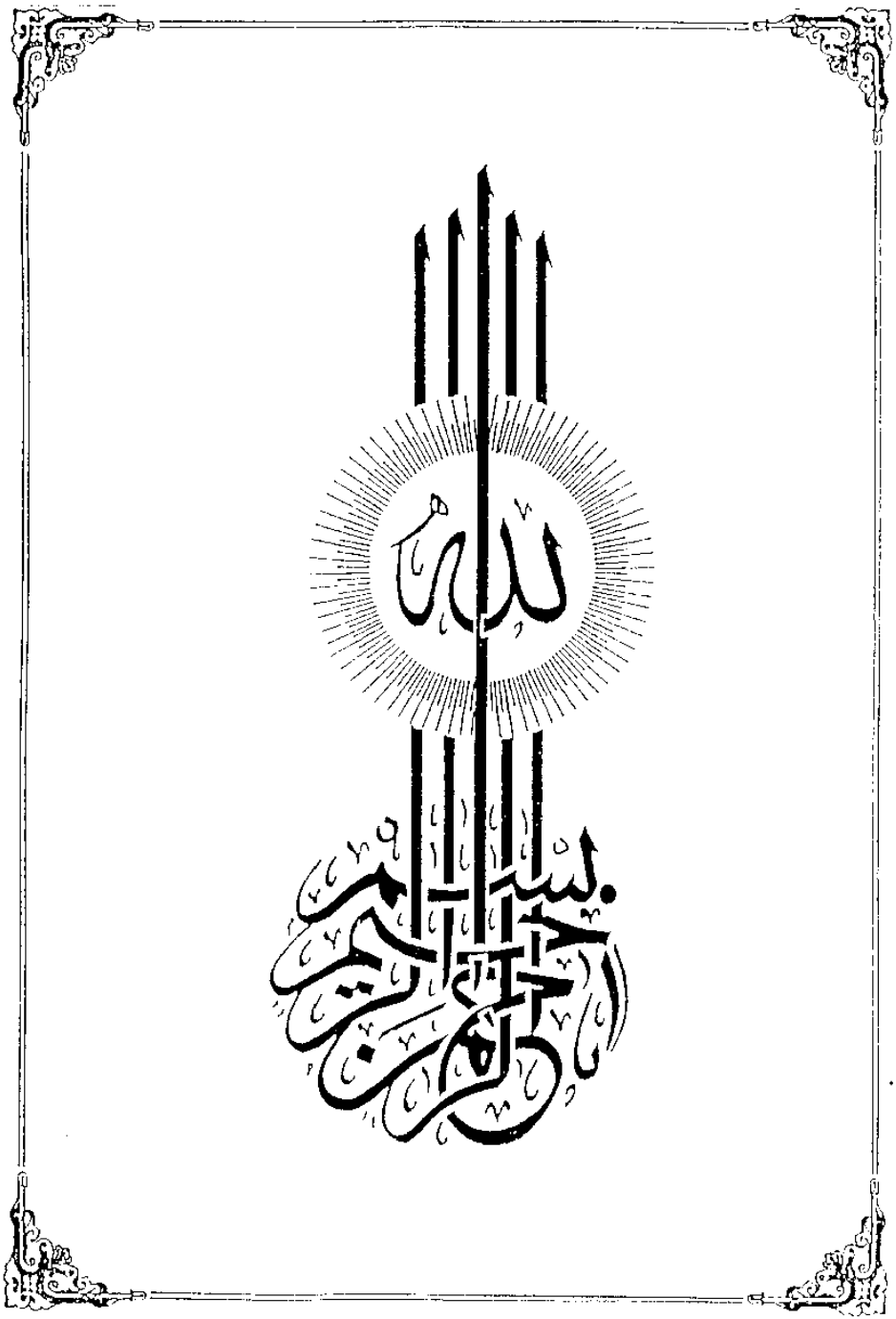

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Introduction

Although a few degrees of hyperextension of the knee frequently give stability to paralyzed joint, which would otherwise be incapable of bearing a body weight, genu recurvatum of twenty-five degree or more constitutes a serious handicap to locomotion. Also in case of marked deformity, fifty-degree or more, walking is impossible and the patients is helpless. ***(Mayer, L. 1930).***[1]

Genu recurvatum defined as hyperextension of the affected knee beyond the neutral anatomical position during the stance phase of gait ***(Meg. E.Morris et. Al,. 1992)***[2]

However excessive genu recurvatum occurs relatively infrequently in anterior poliomyelitis ***(Gill. A.B. 1913).***[3]

It's also a problem of other paralytic disease such as C.P., cerebral stroke and neuropathic type of arthrogryposis multiplex congenita syndrome ***(Brown, L.m Robson ., M.J sharrad, W.J , 1980).***[4]

It's a disabling condition and difficult to treat due to increased vertical movement the center of gravity of the body which leads to increase in energy expenditure ***(Sarosh, V. Mehta. Mukherjee, A.K. 1991).***[5]

Many authors suggest different lines of management to this disabling problem, which we review here in our article with evaluation to each procedure.

Aim of the work

Paralytic genu recurvatum is not an uncommon problem as it was thought, it's a serious handicap and very difficult to treat. In this article we try to resume up the problem and illustrate its methods of management.

Anatomy Of The Knee Joint

The knee joint has got distinctive anatomic features to meet the changing stresses on it during weight bearing and the mechanism of propulsion of the body in locomotion.

It is complicated in structure with many complex anatomical features, each of real importance, so that when it functions,it needs the combined effects of them all to supply stability as well as flexbility of

function under many variable conditions constantly applied to it. The knee joint is a synovial joint and is essentially a hinge joint, but allows a little rotation during flexion and extension.

Strength of the joint depends upon the powerful ligaments in and about it and the muscles that reinforce the joint and anatomical geometry.

Bony contours

The lower extremity of the femur consists of two condyles separated posteriorly by a deep notch, but fusing anteriorly into a trochlear groove for articulation with the patella ***(McMinn,1990)***[6].

The lateral condyles of the femur and the tibia are broader and flatter and receive most of the weight.

The medial condyle of the femur is longer and elliptical and on a lower level than the lateral, thus permitting the leg to swing out during flexion to prevent interference with its fellow condyle.

The articular surfaces of the patella is divided by a vertical ridge into a large lateral and a small medial surface, this latter is further divided by vertical ridge into smaller areas, the intermediate and perpendicular facets.

Two faint horizontal lines divide the intermediate and lateral surfaces, each into three areas.

Seven facets therefore are seen on the articular surface of the patella: two upper, two middle and two lower and the perpendicular facet.(fig.1)

In extension, the lateral facet and the intermediate facets lies on the trochlea, while the perpendicular facet is not in articulation with the femur.

The medial facet lies wholy on the upper surface of the condyle, but it does not come in contact with the femoral condyle at any degree of flexion.

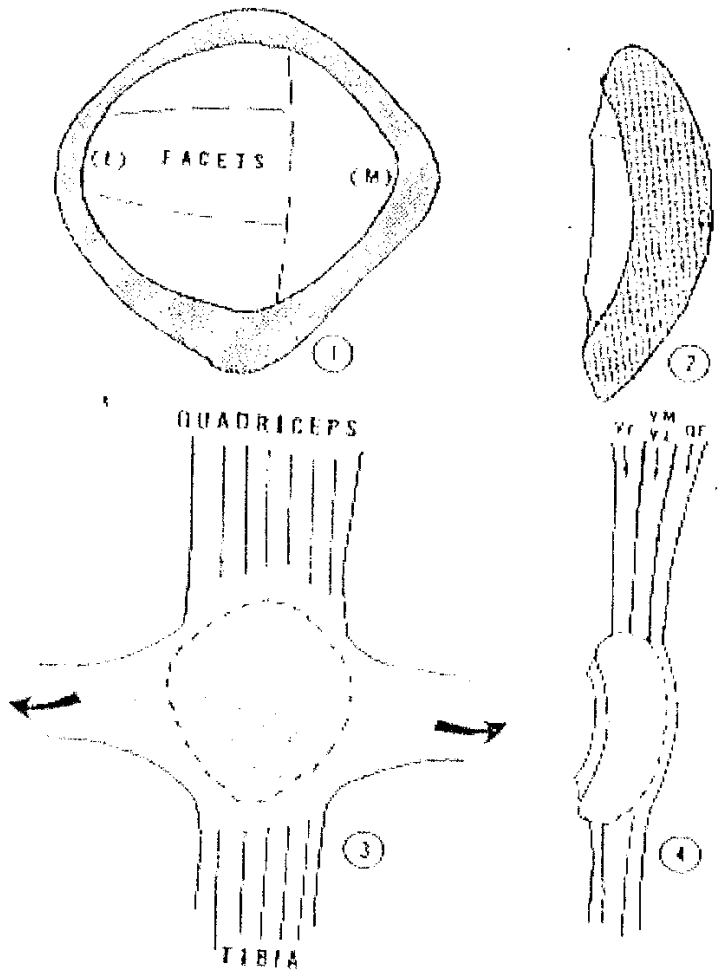

Fig (1): *patella (Mcminn1990)*[9]

1-ventral view.
2-Lateral view.
3-the quadriceps attaches to the patella.
4-Tendinous insertion.

The femoral condyles are partly separated from the tibial condyles by fibrocartilage called the menisci, they lie on the marginal parts of the tibial condyles.

Ligaments

The ligaments are second to muscular apparatus in providing the normal stability of the knee joint. The functional mechanics of the ligaments is such the they all work together as single unit.

The Tibial Collateral Ligament

It runs obliquely, inferiorly and anteriorly. Its femoral insertion lies on the posterosuperior aspect of the condyle. Its tibial insertion is posterior to the insertion of the anserinus tendon.

Its anterior fibers are separate from those of the capsule but its posterior fibers blend intimately with those of the capsule at the medial border of the medial meniscus.

It is a flat, broad, triangular fibrous structure possessing great strength, that plays an important role in the stability of the knee joint.

It consists of two, morphologically distinct parts, a deep and a superficial layer. The superficial part is by far the larger and the more important.(fig. 2)

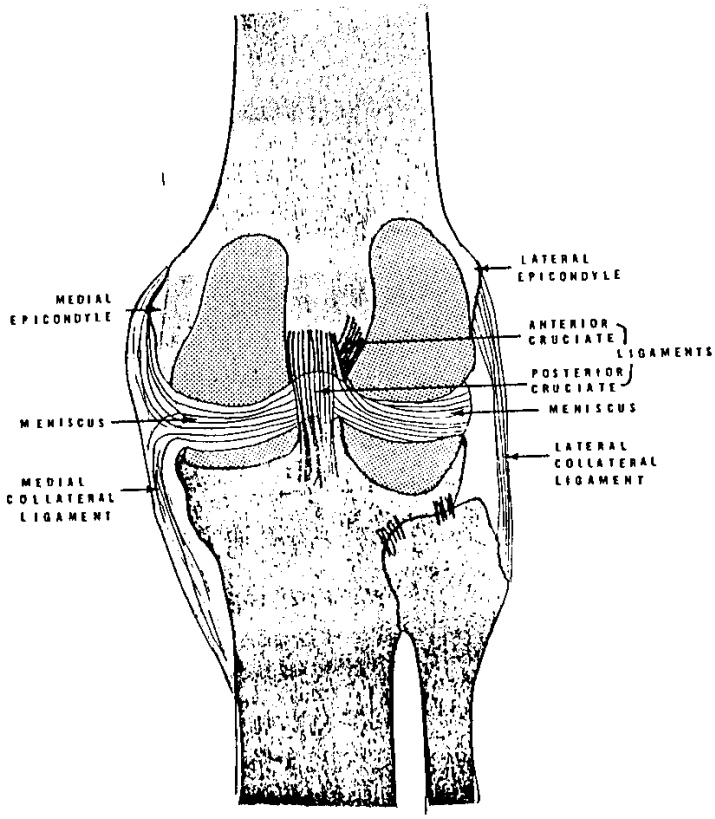

Fig. (2) : Capsular and collateral ligaments (Mcminn, 1990)(6).

The medial ligament is considered as having three functional units.

1- The superficial medial ligament with its anterior border having the long fibers.

2-the deep medial ligament (meniscofemoral and meniscotibial ligaments).

3-The posterior oblique fibres.

In extension, all portions of the ligament are tense, allowing no abduction or axial rotation of the tibia. The ligament is very important to prevent vulgus instability ***(fig.3).***

The fibular collateral ligament .

It runs obiquely, inferiorly and posteriorly. It is attached to the femur superior and posterior to the line of curvature of the lateral condyle. It is attached to the fibular head anterior to its styloid process and deep to the insertion of the biceps . it is free of the capsule along its entire course.

It consists of a deep and superficial component.

The deep portion is separated from the periphery of the lateral meniscus by the tendon of popliteus muscle and contributes to the formation of the arcuate ligament.