TKA and extensor mechanism dysfunction

Extensor dysfunction

- Neurological
  - Congenital
    - Spina bifida
  - Acquired
    - Poliomyelitis
    - Parkinson

- Mechanical: # ext. mech.
  - Traumatic
    - Tendon rupture
    - Patella fracture
  - Degenerative
Spina Bifida

Extensor dysfunction
- Neurological
- Not a good indication for TKA
- Mechanical: if ext. mech.
- Trauma
- Laxity or rupture
- Joint instability
- Depression

E.D. 38 y spina bifida
- Two crutches
- Very difficult and painful gait
Extensor dysfunction

- Neurological
  - Congenital
  - Acquired
    - Poliomyelitis
    - Parkinson
- Mechanical:
  - Traumatic
  - Degenerative

N.P. 57 y
- R knee poliomyelitis sequelae
- Deteriorating valgus and dysfunction R
- L knee progressively symptomatic

N.P. 57 y
- R knee poliomyelitis sequelae
- Deteriorating valgus and dysfunction R
- L knee progressively symptomatic
N.P. 57 y
- Quad's L: 5/5 - R: 3/5
- Hyperextension 10° R.
- Shortening R.

QUID?

Osteotomy R femur
Was this a good idea?

6 weeks

3 months
Surgical Management of Gonarthrosis in Patients With Poliomyelitis

Brendan M. Patterson, MD,* and John N. Insall, MD†

Abstract: The authors reviewed nine cases of degenerative disease of the knee in patients with a history of poliomyelitis. All patients were treated with a constrained total knee arthroplasty. The average follow-up period was 4.8 years (range, 6 months to 13 years), and the average follow-up knee score using the Hospital for Special Surgery rating scale was 76. Three of the patients required revision total knee arthroplasty to a more constrained implant. Pain relief was predictably very good and knee stability was initially improved. However, none of the patients suffered a decline in ambulatory ability with time. Key words: knee, arthroplasty, poliomyelitis.

Total Knee Arthroplasty in Patients With Poliomyelitis

Louis Jordan, MD, Mordechai Kligman, MD, and Thomas P. Sculco, MD

Abstract: Between 1991 and 2001, 17 primary total knee arthroplasties were performed in 15 patients with knees affected by poliomyelitis. Eight patients had a constrained condylar knee design, 6 a posterior stabilized design, and 3 a hinged design. Mean follow-up was 41.3 months. The mean Knee Society knee score improved from 45 preoperatively to 87 postoperatively. Knee stability was obtained in all patients, including 6 patients with no plain anteroposterior roentgenograms. Radiologic evaluation showed satisfactory alignment with no signs of sinking. Complications included 1 case of deep venous thrombosis and 3 knees that required a manipulation for stiffness. Pain relief, functional improvement, and knee stability can be achieved after constrained total knee arthroplasty in patients with poliomyelitis despite impaired quadriceps strength, and anemia and soft tissue abnormalities. Key words: poliomyelitis, total knee arthroplasty, constrained condylar knee.

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Total knee arthroplasty in patients with poliomyelitis

Total Knee Arthroplasty in Limbs Affected by Poliomyelitis

O.A. 35 Y

- Leukemia at age 14
- High dose corticosteroids:
- AVN L hip and R knee
- Infection R knee
- Dropfoot
- Lengthening femur
Extensor dysfunction

- Neurological
  - Congenital
    - spina bifida
  - Acquired
    - poliomyelitis
    - Parkinson
- Mechanical: # ext. mech.
  - Traumatic
  - Degenerative

Extensor dysfunction

- Neurological
  - Congenital
    - spina bifida
  - Acquired
    - poliomyelitis
    - Parkinson
- Mechanical: # ext. mech.
  - Traumatic
  - Degenerative
Acute quad’s rupture after TKA

Extensor mechanism rupture after TKA
- Simple repair often disappointing
- Repair and augmentation grafting for selected cases
- Allograft reconstruction of extensor mechanism in chronic insufficiency
  - Post-infection
  - Multi-revision
Extensor mechanism reconstruction with allograft

- Emerson 1990, 1994: fixation in flexion
  - Extension lag occurred
- Nazarian and Booth 1999: tight fixation in extension
  - Improved early results

Extensor mechanism reconstruction with allograft

- 20 consecutive cases
  - 7 minimal tension: all failures with mean extension lag of 59°
  - 13 tight tension in full extension: all successes with mean extension lag of 4.3° at 24 months

Extensor dysfunction

- Neurological
  - Congenital
  - Cerebral palsy
  - Acquired
    - Poliomyelitis
    - Parkinson

- Mechanical: # ext. mech.
  - Traumatic
  - Degenerative

M.M. °07/08/1939
- Bilateral deg.
- Quad’s 2-3/5
- Wheelchair bound
- R knee very unstable
Extensor dysfunction

- Neurological
  - Congenital
  - Spina bifida
  - Acquired
    - Poliomyelitis
    - Parkinson
- Mechanical: # ext. mech.
  - Traumatic
    - Tendon rupture
    - Patella fracture
  - Degenerative
Extensor dysfunction
- Is one of the few remaining indications for arthrodesis of the knee

Case F.N.

Case F.N.
Case F.N.

- Has problems with
  - Sitting
  - Rising from a chair
  - Walking
  - Foot hygiene
- Overloads his ankle, hip, lumbar spine and contralateral knee

Why arthrodesis of the knee

- Creation of a limb that is
  - Stable
  - Painfree
  - Durable
  - Allows gait
- Function after arthrodesis of the knee is superior to that after above knee amputation