

## **Congenital Synostosis of the Knee: Early Results of Limb Reconstruction Surgery**

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**Purpose:** Congenital fusion of the knee joint is rare. Recommended treatment options include observation, knee disarticulation, supracondylar extension osteotomy of the femur, and realignment through the fusion mass. We present the early results of five patients who underwent limb reconstruction surgery for this rare condition.

**Methods:** Five patients (three females, two males) presented to our institution between 2000 and 2007. Involvement was unilateral in three and bilateral in two patients (total of seven knees). Average age at presentation was 2.5 years (range, 0.9–5.2 years). Clinical data collected included clinical features, position of knee fusion, limb length discrepancy, laterality, ambulatory capacity, associated manifestations, associated syndromes, intellectual development, and operative procedures. Radiographs were reviewed to describe the position and type of fusion, presence of patella, the quadriceps shadow, alignment of the limb, and associated features. Outcomes reviewed included final limb alignment, equalization of leg length discrepancy, ambulatory capacity at final follow-up, and complications of procedures.

**Results:** All patients presented with knee flexion deformity, limb length discrepancy, and delayed walking ability. Average knee flexion deformity was 94° (range, 60°–120°). Exact limb length discrepancy was difficult to assess preoperatively because of the knee flexion deformity. Patients with unilateral involvement were crawling and walking on their knees. Those with bilateral involvement were bottom shuffling. Intellectual development was considered to be normal in all patients. All patients had associated hypoplasia of lower and/or

upper extremity long bones. Average age at surgery was 5.9 years (range, 3.6–9.2 years). Average follow-up was 2.0 years (range, 0.5–3.5 years). In all patients, we were able to realign the knee and place it in a more functional position of full extension, neutral rotation, and neutral varus/valgus. No deformity recurrence was observed at last follow-up. Limb length was equalized in one patient. Ambulatory capacity was improved in all patients. All other patients will require limb length equalization procedures in the future. No major complications occurred. Three patients had pin site infection, one had premature consolidation, and one patient had transient loss of pulses during acute correction.

**Conclusion:** Congenital synostosis of the knee is rare. Careful evaluation to assess intelligence, overall prognosis, and associated features involving the other extremities is important in the decision making process.

**Significance:** Limb reconstruction surgery using our approach allows for reliable realignment of the lower limb, improves walking ability, and improves the overall function of the limb.