

Idiopathic Congenital Dislocation of the Knee: Case Series of Spontaneous Reduction

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Learning Point of the Article:

A period of observation is warranted for idiopathic Congenital Dislocation of the knee (CDK). In this series, six out of seven knees reduced spontaneously, and the remaining knee required only a brief period of casting at approximately 3 months of age.

Abstract

Introduction: Idiopathic congenital dislocation of the knee (CDK) represents a distinct clinical category. Grade III CDK, defined as knee flexion $<30^\circ$ has a poor prognosis. The standard of care is “as soon as possible” manipulation and casting. Waiting for spontaneous reduction is not regarded as an accepted treatment strategy. The purpose of this study is to report on the occurrence of spontaneous reduction in idiopathic grade III CDK.

Materials and Methods: This prospective cohort study included consecutive cases of idiopathic CDK treated from April 2020 to August 2025. Inclusion criteria were: Absence of neuromuscular or genetic diseases, diagnosis of grade III CDK, and follow-up until full recovery.

Results: Seven knees in five female patients with grade III CDK were included; two had bilateral CDK. All pregnancies were full-term with cephalic presentation; one infant was delivered by cesarean section. Four neonates were firstborn. Hip ultrasound showed dysplasia in three patients, bilateral in two, and unilateral in one. Spontaneous full reduction occurred in six out of seven knees before 1 month of age. In the remaining knee, the flexion gradually improved to 30° , after which reduction was prompted by casting once for 2 weeks at 11 weeks of age. All knees regained a normal, stable range of motion. Bilateral dysplastic hips normalized spontaneously in one patient, while the other two required fewer than 6 weeks of splinting.

Conclusion: These findings suggest a potential role for observation in the management of idiopathic grade III CDK. In this cohort, all infants were non-breech, had no foot deformities, or teratologic etiology.

Significance of study: A period of observation is warranted for idiopathic CDK. In this series, six out of seven knees reduced spontaneously, and the remaining knee required only a brief period of casting at approximately 3 months of age.

Keywords: Congenital knee dislocation, idiopathic congenital dislocation of the knee, hip dysplasia, infant, children, pediatric orthopedics, treatment.

Introduction

Incidence of congenital dislocation of the knee (CDK) is 1% of the incidence of developmental dysplasia of the hip (DDH) [1]. CDK encompasses several clinical presentations: It may be idiopathic or have an underlying cause, such as Larsen syndrome,

arthrogryposis, myelodysplasia, or chromosomal disease. The deformity is characterized by anterior displacement, and severity is classified as follows: Grade I, simple hyperextension with more than 90° of flexion; grade II, subluxation with a maximum flexion between 30 and 90° ; and grade III, true dislocation with flexion

Author's Photo Gallery



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Figure 1: Case 1. (a) Left lateral knee radiograph while attempting flexion showing complete anterior translation of the tibia on the femur. (b) Left knee lateral radiograph at 1 month follow-up confirming reduction.

<30° [2]. CDK commonly coexists with DDH and foot deformities. Breech presentation has been classically considered as a risk factor [3]. Pre-natal diagnosis is possible [4].

Conventional wisdom is early initiation of treatment, with most authors recommending against any delay [5, 6]. Serial splinting is universally employed and followed by surgery if manipulation fails. The most widely used surgical interventions are minimally invasive releases and conventional V-Y quadricepsplasty [7]. Moreover, based on their cohort of idiopathic cases, Abdelaziz and Samir advised against attempting serial casting for grade III CDK [2]. The hip is addressed when the knee has sufficient flexion for proper hip immobilization. When the degree of knee

flexion is sufficient, club foot, if present, can be casted simultaneously with the knee [5,7].

Apart from the study by Haga et al., which suggested withholding treatment of isolated idiopathic CDK for 1 month to allow for spontaneous reduction, no publications considered a period of observation [8]. The aim of this report is to present six cases of spontaneous complete resolution of grade III CDK and one case requiring only minimal manipulation.

Case Series

This study includes consecutive patients managed by a single attending physician from April 2020 to August 2025. Data were collected prospectively. All neonates referred with genu recurvatum were assessed for inclusion.

Eligibility criteria were: (1) Absence of neuromuscular and genetic diseases, (2) verified neonatal physical exam and radiographs indicating the diagnosis of grade III CDK, and (3) follow-up until completion of treatment. Table 1 summarizes the cases presented. The families were consented in accordance with the ethical standards set forth in the Declaration of Helsinki.

Case 1

The patient was a girl, born at term (40 weeks of gestation) by normal spontaneous cephalic delivery. The mother had gestational diabetes, and the pregnancy was otherwise uneventful. Family history was negative. She was the mother's

first child. Neonatal clinical exam revealed left knee hyperextension without other overt musculoskeletal abnormalities. Left knee flexion did not go beyond neutral, and the femoral condyles were palpable posteriorly. Lower limb radiographs showed grade III left knee dislocation (Fig. 1a). There were right Graf type 3 and left type 4 hip dysplasia in ultrasound at birth. Pavlik harness application was thwarted by the extended knee. The prognosis was initially thought to be poor. After hospital discharge, the parents noted gradual left knee improvement without any splinting or manipulation. By 1 week after birth, the knee hyperextension had completely resolved. At 1 month, follow-up

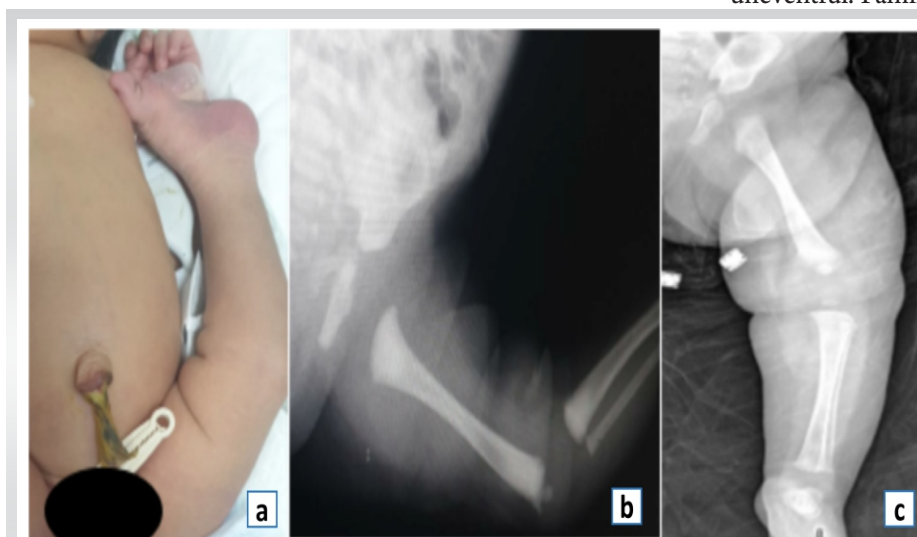


Figure 2: Case 2. (a) Clinical photograph. (b) Initial radiograph showing left knee dislocation. (c) Follow-up radiograph after spontaneous reduction.



Figure 3: Case 3. (a) Initial right knee radiograph. (b) Initial left knee radiograph.

examination showed that the left knee range of motion and stability were similar to the right side. Radiographs confirmed the reduction (Fig. 1b). The hips also normalized on the follow-up ultrasound without treatment. Although recurrence was not anticipated, periodic evaluations were performed.

Case 2

This patient was a female neonate born to a primigravida by cesarean section at 39 weeks due to failure to progress. The presentation was cephalic, and the pregnancy was uneventful. Family history was non-contributory. Neonatal exam revealed left knee hyperextension, which did not flex past neutral (Fig. 2a and b). The remainder of her physical exam was normal. Radiographs confirmed the diagnosis. Ultrasound excluded DDH. The orthopedic service did not recommend manipulation or casting for the dislocated knee. The left knee reduced spontaneously before 1 month of age and was completely normal clinically and in radiographs (Fig. 2c).

Case 3

The patient was a firstborn female delivered uneventfully at 40 weeks of gestation. Birth was by normal spontaneous vaginal delivery in a cephalic presentation. Family history was unremarkable. Physical examination revealed bilateral hyperextended knees

with no flexion possible, as confirmed in the radiographs (Fig. 3). Hip ultrasound revealed right type 3 and left type 2b hip dysplasia. We opted for expectant management for the knees, which reduced within 72 h after birth. A Pavlik harness was used for 6 weeks to treat the hip dysplasia, which normalized on follow-up imaging. The knees were stable, with a full range of motion and normal alignment; therefore, follow-up radiographs for the knees were deemed unnecessary.

Case 4

The patient was a female infant born at 39 weeks of gestation by spontaneous vaginal delivery in cephalic presentation. The mother was a healthy, gravida 12, para 10. The perinatal course and family history were unremarkable. Examination revealed hyperextended knees with no flexion possible. Hip ultrasound revealed right type 2b and left type 3 DDH. No intervention was performed initially. By 1 week of age, the right knee reduced spontaneously (Fig. 4). The left knee continued to improve, but plateaued at around 11 weeks of age, with flexion limited to 30°. A long-leg reduction plaster of Paris cast was applied for 2 weeks; after which, the left knee normalized. The right hip dysplasia

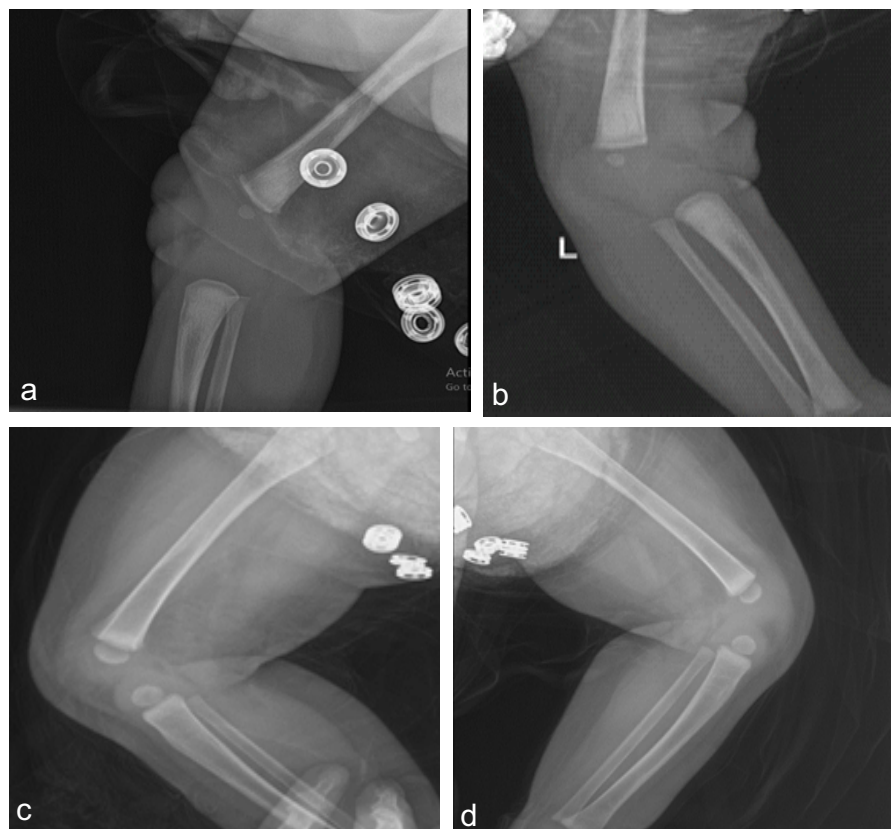


Figure 4: Case 4. (a) Right knee radiograph immediately after reduction at 1 week of age. Note anterior crease. (b) Left knee persistent dislocation. (c and d) Radiographs after a single cast application for the left knee at around 3 months of age.





Figure 5: Case 5. (a) Clinical photograph. (b) Maximum flexion possible. (c) Right knee radiograph. (d) The same radiograph at maximum flexion.

gestation by vaginal delivery in a cephalic presentation. The mother was a healthy primigravida, and the pregnancy was uneventful. The mother had unilateral knee hyperextension at birth that resolved spontaneously, and her grandmother had the condition bilaterally, which was self-limiting. On examination, there was rigid right knee hyperextension (Fig. 5a). No other findings were elicited, and DDH was not detected on ultrasound. Radiographs are shown in Fig. 5b-d. By the age of 2 weeks, the knee had reduced spontaneously.

Discussion

Non-operative management of CDK is not without risk, as closed reduction may lead to tibial plastic deformation, metaphysical fractures, physal separation, or joint line deformity [1,7]. Roth et al. treated three patients who were born with bilateral idiopathic CDK using early serial casting. Only one knee required surgical treatment. However, all knees had a marked limitation of movement, with maximum flexion limited to 100° [9],

improved. After the reduction of both knees, there was residual dysplasia on the left hip, which resolved after 1 month of full-time abduction bracing.

Case 5

The patient was a term female infant born at 40 weeks of

which is similar to an earlier report in a mixed group of patients [3]. In addition, some authors advocate manipulation in simple hyperextension and subluxation, but not for the dislocated knees [1,2]. Cheng and Ko performed a closed reduction maneuver within the first 24 h of life, followed by immobilization. All of the 13 knee subluxations were

Table 1: Summary of idiopathic grade III CDK cases

Sex	Birth order	Delivery	Presentation	Laterality of CDK	Coexisting DDH	Casting	Timing of CDK normalization	Remarks
F	1st	NSVD	Cephalic	Left	Bilateral	None	1 week	Maternal gestational diabetes
F	1 st	CS	Cephalic	Left	None	None	4 weeks	
F	1 st	NSVD	Cephalic	Bilateral	Bilateral	None	3 days	Pavlik Harness for the hips after reduction of knee reduction
F	10 th	NSVD	Cephalic	Bilateral	Left	Once for the left knee at age 11 weeks	1 week for the right and 13 weeks for the left	After complete reduction of the knees, abduction brace was applied for the left DDH
F	1 st	NSVD	Cephalic	Right	None	None	2 weeks	Mother and grandmother had similar conditions, which resolved spontaneously.

CDK: Congenital dislocation of the knee, DDH: Developmental dysplasia of the hip, CS: Cesarean section, NSVD: Normal spontaneous vaginal delivery



successfully reduced, and five of the six knee dislocations responded favorably. The single failed reduction was in a knee that had an associated club foot [6].

Vicente-Ferreira et al. were faced with unilateral grade I CDK in a newborn and planned serial casting, but the knee spontaneously reduced on the 3rd day of life [10]. Similarly, Borges et al. reported a case of bilateral idiopathic grade III CDK where spontaneous reduction occurred 24 h after birth [11], consistent with a case reported by Ceylan [12]. Serendipitous reduction is probably a frequent occurrence that is not adequately reported. Haga et al. proposed differentiating CDK based on the presence of associated conditions and believed that some of these cases are postural. They intentionally waited for spontaneous reductions in seven knees of six patients that had isolated idiopathic CDK without club feet. Simple hyperextension was excluded. Six knees were subluxated and only one knee was dislocated. There was one ipsilateral DDH. All had a cephalic presentation. In two knees, there was minimal splinting, but no traction or casting, and the remaining five knees were only observed. Spontaneous reduction occurred within 2 weeks in six knees, and the seventh knee reduced spontaneously at 3 months. Complete flexion was achieved in all knees after reduction, with no recurrence after a minimum follow-up of 6 months. Based on these findings, the authors recommend a 1-month observation period in isolated

idiopathic CDK [8]. These recommendations have been largely overlooked.

In the present report, one patient experienced spontaneous resolution of the bilateral hip dysplasia in 1 month without treatment. This supports the timing of ultrasound screening at 1 month of age to reduce overtreatment [13]. When done during the first 3 days of life, universal ultrasound screening was positive in only 2.1% of children as per Graf classification in a study by Gyurkovits et al. [14]. In addition, four out of five patients were firstborn, which may support that increased intra-uterine pressure contributes to the development of CDK.

Conclusion

In the absence of club foot, breech presentation, or teratologic conditions, a few weeks of observation is advisable to allow for spontaneous reduction of CDK.

Clinical Message

Idiopathic CDK appears to be a packaging disorder, occurring more frequently in females with cephalic presentation. A short period of observation is recommended before initiating casting.

Declaration of patient consent: The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given the consent for his/ her images and other clinical information to be reported in the journal. The patient understands that his/ her names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Conflict of interest: Nil **Source of support:** None

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