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Habitual patellar dislocation managed with lateral release, medial release & medial plication; case report & review of literature

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Abstract
This case report describes a rare case of habitual dislocation of the patella which was accompanied with patella alta & medial patellar retinaculum (medial patello-femoral ligament) high grade tear in a 9-year-old girl. She complained of habitual patellar dislocation in the early knee flexion phase. Plain radiography and computed tomography (CT) showed patellar malalignment, patella alta & type II trochlear dysplasia (By Dejour classification). Surgery was performed, consisting of lateral retinaculum release, vastus medialis obliques (VMO) advancement and reconstruction of medial patellofemoral ligament (MPFL). There was no recurrence of patellar instability in follow up with good clinical outcome & knee range of motion. We conclude that our method of treatment of habitual patellar dislocation by using lateral retinaculum release, vastus medialis obliques (VMO) advancement and reconstruction of medial patellofemoral ligament (MPFL) in a child of 9 years with open physis reproduced excellent functional outcome. It is simple, cheap and does not require any fluoroscopic guidance, solely soft tissue procedure.

Keywords: Habitual dislocation, patella alta, lateral release, medial release & medial plication

Introduction
Although biomechanics and surgical treatments have been examined for habitual dislocation of the patella. In addition, treatment methods have only been reported in a few cases. We present herein a case with successful surgical outcomes for the treatment of habitual dislocation of the patella with patella alta & medial patellar retinaculum (medial patello-femoral ligament) high grade tear.

Case report
A 9-year-old girl who had complained of habitual patellar dislocation(fig-a) for more than 3 years. Physical examination revealed patellar dislocation at knee flexion of approximately 30 that was easily reduced without pain. Dislocation was spontaneous & reduction accompanied painless. No signs of apprehension, joint laxities, or systemic disease were observed. Scannogram(fig-b) showed decreased quadriceps angle (Q angle) of 4.3 degree. MRI (fig-c) showed medial patellar retinaculum (medial patello-femoral ligament) high grade tear & patella alta.

Surgical procedure
After anaesthesia, patients were positioned supine and torniquet was applied on thigh. Midline skin incision given centering over the patella. Medial and lateral subcutaneous flaps were raised and medial arthrotomy was done(fig-d1). VMO (vastus medialis obliques) and insertion of adductor magnus tendon on adductor tubercle were identified. Extensive lateral retinacular release was done(fig-d2). Vastus lateralis was released from the lateral intermuscular septum uptil the junction of distal and midthigh(fig-d3). The retinaculum was released distally uptil the tibial tuberosity. Two transverse incisions in the distal tendon of vastus lateralis were also required to decrease the lateral pull on the patella. The transverse incisions did not compromise the integrity of the tendon. VMO was advanced distally and laterally and fixed at this position using multiple ethibond sutures simultaneously sutures(fig-d4). Soft tissue balancing was checked with each step to fine-tune patellar tracking and knee range of movement while tightening suture. Closure of the wound was done in layers and a plaster of paris above knee slab was applied in extension. After suture removal at 2 weeks patients were subjected to gradual range of movement exercises of knee and progressive weight bearing.

Discussion
Habitual dislocation of patella is a rare condition which is different from recurrent patellar dislocation [1].A more holistic approach is required for habitual patellar dislocation. The pathology consists of patella alta & medial patellar retinaculum (medial patello-femoral ligament) high grade tear. Joo et al. described four in one procedure for habitual dislocation of patella in children. It consists of lateral release, proximal tube realignment of patella, semitendinosus tenodesis and transfer of patella tendon [2]. It is a combination of procedures which have been described by various authors as independent procedures for recurrent and/or habitual dislocation of patella. Niedzielski et al. showed good results using the same technique. We did an extensive lateral retinaculum release. It extended distally to the lateral border of patella tendon and proximally till the junction of middle and distal third of thigh [3]. The vastus medialis muscle was separated from the quadriceps tendon by sharp dissection. It was brought distally and laterally at the end of the procedure and fixed to the quadriceps tendon and anterior patella. The gap in the lateral retinaculum was left open. Semitendinosus tenodesis was originally described by Galeazzi, where the distal attachment of the tendon is left intact and an oblique tunnel is made in patella for the tendon [4].It prevents superolateral displacement of patella. However, in habitual dislocation only the lateral movement of patella needs to be prevented. Hence we opted for a method of MPFL reconstruction which prevents only the lateral dislocation of patella [5]. Many techniques have been described in children which avoid the damage to the

distal femur growth plate.We used a technique of MPFL reconstruction which was a modification of the technique described by Yercan et al. Roux Goldthwait described distal realignment of extensor mechanism by medial shift of lateral half of patella tendon under the medial half of the patella tendon [6].We adjusted the tension in the transferred lateral half of the patella tendon to prevent dislocation and tilting of patella. It was fixed to the periosteum and pes anserinus with non absorbable sutures [7]. Additional sutures were placed between the medial and lateral halves of the patella tendon. Osteotomies of distal femur and patella have been described to treat the distal femur dysplasia [8] But we did not perform any osteotomy as it has been shown that the distal femur and patellofemoral joint remodel very well after soft tissue correction alone [9]. The drawback of the study is that due to rarity of the condition only few cases were evaluated. More number of cases are required to statistically compare different methods of treatment of habitual patellar dislocation Conclusion [10]. We conclude that our method of treatment of habitual patellar dislocation in children with younger age with open physis reproduced excellent functional outcome. It is simple, cheap and does not require any image guidance. Conflicts of interest The authors have none to declare. Authors contributions RM contributed in conception and design of study, analysis and interpretation of data, performed surgical procedure in all patients, critically revised and drafted the manuscript. AS contributed in collection, analysis and interpretation of data, literature search and he critically revised and drafted the manuscript. VM contributed in literature search and drafting the manuscript. AR contributed in collection, analysis and interpretation of data, literature search and drafting the manuscript. NS contributed in collection, analysis and interpretation of data.

Pre op image showing patella dislocation

Fig: a

Pre op Roentogrma & Scannogrma

Fig: b1

Fig: b2

Fig: b3

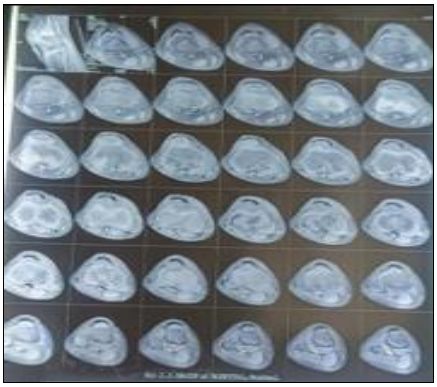


Fig: c (MRI)

Intra op images

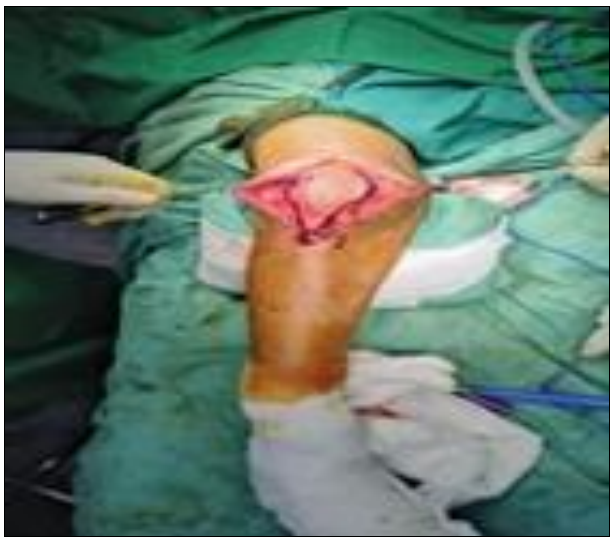


Fig d1: Raising of medial and lateral subcutaneous flaps

Fig d2: Medial arthrotomy

Fig d3: Extended lateral release from intermuscular septum medial plication

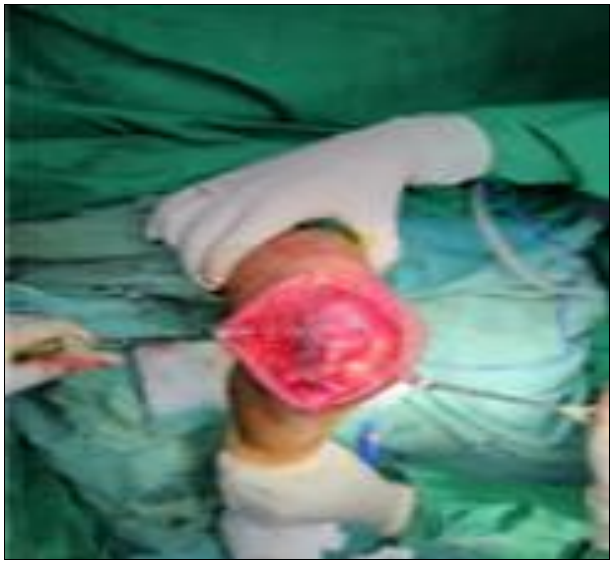
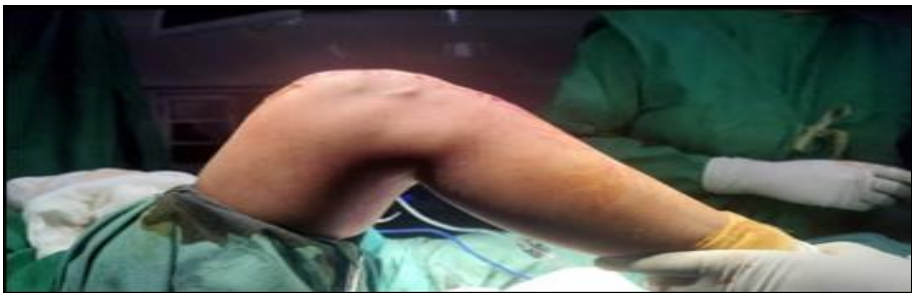


Fig d4: VMO was advanced distally & laterally, fixed at this position using multiple ethibond sutures

Intermediate after closure showing stable patella while flexion



Conclusion

It is simple technique, cost effective, short duration and does not require any fluoroscopic guidance & advance instrumentation, solely soft tissue procedure can be performed by average orthopaedic surgeon in remote area.

Learning Point of the Article

We have achieved excellent results by only soft tissue procedure in immature age group of child without any corrective osteotomy

Clinical Message

In case of habitual patellar dislocation at initial 30 degree of flexion only by doing extended lateral release, with medial plication after medial arthrotomy without any tibial tuberosity advancement (bony procedure & osteotomy)

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