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Bucket handle horizontal cleavage tear of medial meniscus with congenital deformity– A case report★

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ABSTRACT

Bucket Handle tears occur most commonly in the medial meniscus. A typical Bucket Handle tear is a vertical tear from femoral surface of meniscus to tibial surface and extending longitudinally along the length of the meniscus from the anterior horn or body to the posterior part of the meniscus. The reported case is a rare one of horizontal cleavage tear of meniscus which developed bucket handle tear extending from anterior third of body to the posterior body in an ACL deficient knee and valgus deformity of lower limb and agenesis of 5th Metatarsal. The type of meniscal tear along with other contributory clinical findings makes this case unique. This has been successfully treated using outside in sutures and ACL reconstruction.

1. Introduction

Medial Meniscal tears occur more frequently than Lateral with a ratio of 2:1.[1] In the chronically ACL deficient knee, incidence of meniscal injury has been found to be as high as 98%.[2] Bucket Handle tear occurs when a vertical tear of the meniscus in the rim occurs over a long enough portion of the meniscus to make it unstable and the central segment displaces into the joint causing locking. The reported one is a rare case of Bucket Handle horizontal cleavage tear along with ACL deficiency in a 22 year old lady with a congenital deformity of the lower limb which could have caused this complex type of tear.

2. Case report

A 22 year old lady presented with Right knee pain of 2 years duration worse for 1 week prior to presentation. She had acute pain of same knee 1 year ago which was treated conservatively. There were on and off episodes of knee pain since then. There was no history of clicking/locking or swelling of the knee and no definite history of trauma. She was born with deformed divergent 4th and 5th toes. Clinically she had 2 + ACL laxity, Meniscal signs were +ve. Right lower limb valgus of 10° and splayed 4th and 5th toes with absent 5th metatarsal. There was no family history of congenital anomalies. CT scannogram showed a valgus deformity of proximal third tibial shaft with an angle of 3.5° at the CORA, a dysplastic lateral femoral condyle and tibial eminence (Fig. 1a). Radiograph of the foot showed splayed 4th and 5th toes, bases of proximal phalanges of both toes articulating with the head of 4th metatarsal, and an absent 5th metatarsal. Fibula was intact (Fig. 1b). MRI of the knee confirmed an absent ACL and medial meniscal horizontal cleavage tear (Fig. 2a and b).

Examination under anaesthesia revealed Lachman 2+, Anterior Drawer 2+, Pivot shift + ve, PCL, PLC intact and collaterals were intact. Arthroscopy revealed an absent ACL and a bucket handle tear of femoral side flap of horizontal cleavage tear of medial meniscus which was reducible (Fig. 3a). The meniscal tear was reduced and an outside in repair was done (Fig. 3b) with the help of Meniscal Menders (Smith & Nephew). ACL was reconstructed using All inside ACL Reconstruction system (Arthrex) using Semitendinosis tendon graft (Fig. 4a and b). At 6 weeks and 3 months follow up, her knee was stable, she had full Range of movements and mobilised full weight bearing without support.

3. Discussion

ACL deficiency is known to occur with Fibular hemimelia.[3] With absent ACL, medial meniscus is at risk of tear and the risk increases

★ The manuscript represents an honest work from the author.
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Fig. 1. a) Lower limb alignment view showing Valgus deformed tibial shaft. b) Radiograph of foot showing absent 5th Metatarsal and divergent 4th and 5th toes.

Fig. 2. a) MRI of knee showing horizontal cleavage tear of medial meniscus. b) Increased signal within the posteromedial meniscus indicating tear.

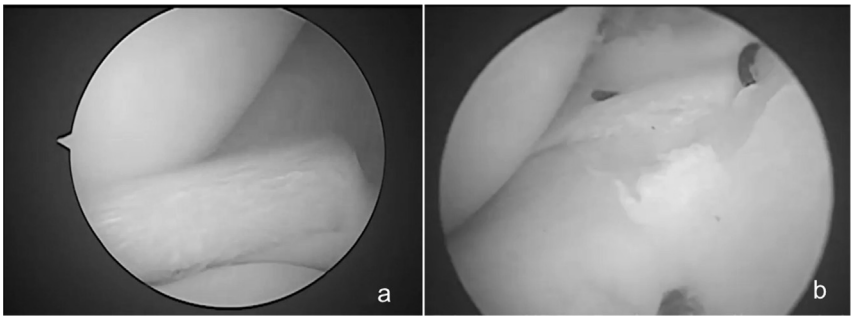

Fig. 3. a) Arthroscopic view of Bucket Handle tear of horizontal cleavage tear of medial meniscus. b) Arthroscopic view after repair of meniscus.

if associated with a malaligned limb. Although the fibula appears normal in our case, the valgus deformity of the tibia indicates Achterman and Kalamchi Type 1 Fibular Hemimelia. Aplasia of 5th Metatarsal is known to occur with Fibular hemimelia. A morphologically similar case was reported in the literature involving lateral meniscus. Lee et al.[4] reported a double layered lateral meniscus in which the upper meniscus was dislocated resembling a bucket handle tear while the lower layer of meniscus

Fig. 4. a) Post op radiograph of knee AP view All Inside ACL reconstruction. b) Post op radiograph of knee Lateral view.

was intact. The patient reported here had history of acute knee pain one year prior to presentation at which stage she may have had tear of the meniscus, possibly the horizontal cleavage part. The latest episode must have created the bucket handle tear involving the rim of the femoral side of the cleaved meniscus creating the current picture.

Radiological appearances suggesting aplasia of cruciate in the literature include dysplastic tibial eminence,[5] dysplasia/hypoplasia of lateral femoral condyle[6] and narrow intercondylar notch. A hypertrophied meniscofemoral Ligament of Humphrey was found by Gabos et al.[3] in ACL deficient knees but this was not found to be in the above case.

In conclusion, there should be a low index of suspicion in patients with congenital limb deficiencies and limb malalignment for meniscal pathologies and the reported case is a rare one of bucket handle tear of part of a horizontal cleaved meniscus successfully treated by outside in meniscal repair and ACL reconstruction. Correction of malalignment of the limb and instability at an early age may have averted the meniscal pathology.

Conflict of interest

None.

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