DISCUSSION

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Clinical evaluation of symptomatic patients following operative management of internal knee derangement including ACL reconstructions, meniscal surgery and articular cartilage repair can be difficult. MRI and arthroscopic assessment are done to evaluate these cases.

MR imaging being a non-invasive technique that avoids complication of arthroscopy plays an important role in evaluating the integrity of the ACL graft, in diagnosing complications associated with ACL reconstruction, evaluating symptomatic patients following meniscal repair and partial meniscectomy as well as evaluation of articular cartilage graft incorporation.

This study included 50 patients (41 males and 9 females) who were complaining after undergoing ACL reconstruction and meniscal surgery as well as follow up in articular cartilage repair surgery.

The patients were divided into three groups. Group I included patients who underwent ACL reconstruction surgery. Group II included patients who underwent meniscal surgery and group III included patients with articular cartilage repair procedures.

The average time interval for group I was one and half years after reconstruction. The average time interval for group II was two years after meniscal surgery and the average time interval for group III was one and half years.

Group I: included 26 patients who underwent cruciate ligament reconstruction surgery, where all the patients had ACL surgery (25 patients had reconstruction and 1 case of fixation of anterior tibial attachment). No case of PCL reconstruction surgery was encountered due to the rarity of the injury and because most of the cases are managed conservatively.

Group II: included 20 patients who underwent meniscal surgery either meniscectomy or meniscal repair.

Group III: included 4 patients who underwent cartilage repair procedures; where all of them had osteochondral autograft transplantation (Mosaicplasty).

Group I

This group included 26 patients in which intermediate high signal intensity was found in the graft of 7 patients. Four of them were considered to be normal after excluding of causes of graft impingement including assessment of the normal position of the tibial and femoral tunnel and considering the time lapse of the operation being less than one year and putting in mind the evolution of signal intensity of the graft attributed to the process of ligamentization.

Three of these patients had meniscal tears explaining the pain two of them had torn posterior horn of the medial meniscus and the third had torn anterior horn of the lateral meniscus. The fourth had meniscal tear and articular cartilage defect at the lateral femoral condyle.

In a study conducted by **Amiel et al**[187] they reported that during the first 3 months after ACL reconstruction, graft constructs are typically uniformly low in signal intensity on T1- and T2-weighted images. Thereafter, a progressive vascularization of periligamentous soft tissues with subsequent synovialization and remodeling results in graft ligamentization.

Jansson et al[188] stated that during this postoperative phase (12–18 months), the graft may normally show a degree of intrasubstance increased signal intensity on T1- and T2-weighted images that is reflective of synovial and neovascular proliferation around and within the graft, which is referred to as "neoligamentization" of graft tissue.

In a study conducted by **Saupe et al**[189] upon 47 patients who has ACL reconstruction using 1.5 MRI machine to evaluate signal intensity characteristic in the reconstructed graft. They found increased intrasubstance graft signal intensity 70 % (33 of 47) and in 64% (30 of 47) of patients on intermediate-weighted MR images and T2-weighted MR images, respectively.

They concluded that small amounts of increased intrasubstance graft signal can be seen after anterior cruciate ligament (ACL) reconstruction at long-term follow-up (4 years) on intermediate-weighted and T2-weightedMR images in approximately two thirds of patients (70% and 64%, respectively).Increased intrasubstance graft signal intensity seen on intermediate- weighted and T2-weighted images does not correlate with clinical findings of instability or subjective functional limitations in patients more than 4 years after ACL repair. No correlation was seen between graft intrasubstance signal intensity changes, graft femoral tunnel position, or slope of an ACL graft on coronal images.

Our results matched with that of **Li et al**[190] who stated that there is high incidence of persistent damage in the lateral tibial cartilage and potential early degeneration in the medial femorotibial cartilage of ACL-injured knees 1 year after ACL reconstruction.

Three cases were diagnosed graft impingement. Two of these patients showed abnormal tibial tunnel position with its anterior border emerging anterior to the Blumensaat line resulting in graft kink at the level of the inter-condylar notch. The time lapse from the date of operation was more than two years. The third patient had dislodged screw in the intercondylar fossa resulting in locking and graft impingement. These patients had also articular cartilage lesion.

White et al[169] and **Trattnig et al**[191] reported that by 2 years after ACL reconstruction, the literature suggests that a normal graft tendon should resume a uniform normal low-signal-intensity MR imaging appearance.

Bencardino et al[155] has reported that ligamentization with small focal areas (<25% of the graft substance) of increased intermediate signal intensity within the graft can persist for as long as 4 years after ACL graft reconstruction.

In this study we diagnosed 11 case of graft tear. Three of them had partial tear where diagnosis was based upon detection of intra-substance fluid signal intensity with still preserved fibers.

Ilaslan et al[192] reported that partial tears of an ACL graft may appear as areas of increased signal intensity within the graft tissue with some residual intact fibers on T2-weighted images.

Recht et al[1] and **Saupe et al**[189] reported that T2-weighted acquisitions may also show regions of increased signal intensity within an intact graft, if such signal was not isointense relative to fluid and not traversing the full thickness of the graft.

Complete tear was found in 8 patients; 6 of them had abnormal tunnel position and anterior tibial translation. Complete graft tear was diagnosed due to absence of intact fibers and fluid filled gap associated with secondary signs such as anterior tibial translation and pivot shift bone bruise on the lateral compartment suggesting new injury.

Bencardino et al[155] and **McCauley et al**[193] reported ACL graft tear was diagnosed in their studies when the graft fibers could not be identified as extending from the femoral tunnel to the tibial tunnel.

Roberts et al[12] reported that tears are seen as intermediate to high T2-weighted signal within the graft, taking into account the normal transition of signal intensity during revascularization and resynovialization of the graft in the 4- to 8-month postoperative period.

In this study we found 6 cases of abnormal tunnel position being located anteriorly with the anterior margin not parallel to the Blumensaat line. All cases of abnormal tunnel position had torn ACL graft.

However; the results does not match with **Saupe et al**[189] who stated that no correlation was seen between graft intrasubstance signal intensity changes, graft femoral tunnel position, or slope of an ACL graft on coronal images.

Bencardino et al[155] reported that the tibial tunnel should be oriented parallel to the projected slope of the intercondylar roof (the Blumensaat line). In the sagittal plane, the opening of the proximal tibial tunnel should be posterior to the intersection of the Blumensaat line and the tibia. In the coronal plane, the tibial tunnel should open at the intercondylar eminence.

In this study we diagnosed 4 cases of tunnel cysts; two of them were femoral and two were tibial. Tunnel cysts were diagnosed when there was tunnel fluid persistent after two years post operative associated with partial or complete tear of the reconstructed graft and relative tunnel expansion.

Sanders et al[194] stated that small amounts of fluid may be seen within the tibial and femoral tunnels during the 1st year after ACL reconstruction.

Bencardino et al[155] reported that the formation of tunnel cysts after ACL reconstruction has been attributed to several causes. Incomplete incorporation of allograft tissue within the bone tunnels and subsequent tissue necrosis may allow synovial fluid to be transmitted through the tibial tunnel to pretibial subcutaneous tissues. Tunnel widening may occur when intraosseous fixation is not performed. Extrusion of joint fluid into the tunnel may lead to formation of a ganglion, which may enlarge over time and cause postoperative pain.

In this study we found four patients with screw failure. Two cases had bulging screws from the anterior aspect of the tibia with resultant pre-tibial bursitis. One case had bulging tibial screw into the inter-condylar notch and the last case had dislodged femoral screw into the intercondylar region resulting in continuous friction with the graft with subsequent graft impingement.

Bencardino et al[155] reported Fixation devices that may loosen or become displaced include bioabsorbable interference screws, metallic setscrews, and pins.

One case was diagnosed as arthrofibrosis. Low signal intensity was detected around the ACL reconstructed graft more evident at its anterior aspect; extending to the Hoffa's fat of pad.

Bencardino et al[155] stated that arthrofibrosis is the presence of scar tissue in at least one compartment of the knee joint, leading to a decreased range of motion.

Lebel et al[195], **Jackson et al**[196] and **Marzo et al**[197] reported that localized anterior arthrofibrosis, or "cyclops" lesion, has been seen in 1%–10% of patients with ACL reconstruction.

In this study MRI findings other than those related to the graft were detected including 17 cases of meniscal injury; 11 case of articular cartilage lesion; 5 cases of patellar cartilage lesion and one case for patellar tendinosis and sprained patellar retinaculum which were blamed for the patients' symptoms.

Group II

This group included 20 patients. In which 17 patients had the medial meniscus involved (85%) among them one case involved the anterior horn; two cases involved the body and 14 cases involved the posterior horn. The lateral meniscus was involved in 3 cases (15%).

These findings are matching with the previous studies conducted by **Rath et al**[18] and **Gupte et al**[22] who found that tears are more common in the medial meniscus, possibly because the medial meniscus is less mobile, and it bears more force during weight-bearing than the lateral meniscus, with 56% of tears involving the posterior horn of the medial meniscus. Tears isolated to the anterior two thirds of the meniscus are uncommon, representing only 2% of medial and 16% of lateral meniscal tears.

However; they found that lateral meniscal tears are more common in younger patients (under 30 years old), because they have a higher incidence of tears related to sporting events than do older patients. But in our study the patients' age ranged from 38 to 47 years. This difference might be due to the low number of examined patients.

In this study five patients had meniscal repair surgery; all of them involving the medial meniscus and all showed re-tear.

Fifteen patients had partial meniscectomy three involving the lateral meniscus and 12 cases involving the medial meniscus; among which 4 patients had re-tear.

The diagnosis of meniscal tears is critical for reducing morbidity and planning treatment. It is well established that meniscal damage predisposes the adjacent articular cartilage to increased axial and sheer stress, resulting in early degenerative osteoarthritis.[198]

In a study conducted by Oei et al[199] on 30 patients in a period between 1991 and 2000 they concluded that MR imaging demonstrates high sensitivity (93% for the medial meniscus [MM] and 79% for the lateral meniscus [LM]) and specificity (88% for the MM and 96% for the LM) for detection of meniscal tears.

In this study we considered the following MRI findings as normal appearance in operated meniscus: subnormal volume of the partially resected meniscus, irregularity of its surfaces, and intermediate high signal intensity in T1 and proton density sequence may also be noted within the substance of the repaired meniscus extending to the surface of the partially resected meniscus.

McCauley[193] stated that postoperative changes in the meniscus may mimic or obscure tears. Studies on meniscal repair have shown that linear increased signal intensity extending to the surface can persist at the site of surgery for at least 1 year after repair.

Our findings are matching with the findings in a review done by **Fox**[25] who stated that abnormal T1-weighted or proton density signal extending to the meniscal surface in the repaired or healing meniscus, can persist for years after a repair. In patients with resection of less than 25% of the meniscus, conventional MR imaging is as accurate as MR arthrography, and that the criteria to diagnose a tear in these patients should be the same as that used for a meniscus without prior surgery.

We diagnosed re-torn meniscus in 9 cases following meniscal repair or partial meniscectomy when we found: High fluid signal intensity extending through the site of repair on T2-weighted images, displaced meniscal fragments, and abnormal signal intensity at a site distant from the site of repair.

These data are matching with **McCauley**[193] who reported that the use of the stricter criterion of fluid signal intensity within a linear defect in the meniscus on T2-weighted images has been shown to provide high specificity (88%– 92%) but low sensitivity (41%–69%) for tears.

Identification of displaced meniscal fragments allows detection of tears with high confidence; however, displaced fragments are only seen in the minority of tears.

MR arthrography can improve the accuracy for detection of a meniscal tear in the postoperative knee, according to the results of three studies by **Applegate et al,**[200] **Sciulli et al,**[201] and **Magee et al.**[202]

However; **White et al**[117] compared groups of patients who were imaged with either conventional MR arthrography, indirect MR arthrography, or direct MR arthrography. They found that the sensitivity and specificity, respectively, for direct MR arthrography were 89% (17 of 19) and 78% (seven of nine), which were higher than the 86% (25 of 29) and 67% (10 of 15) found for conventional MR imaging; and this difference was not statistically significant.

Recht and Kramer[1] stated that although the use of arthrographic technique was previously believed to increase the accuracy of MR imaging in the evaluation of retorn menisci, a recent study comparing conventional MR imaging with MR arthrography found that this increase was not statistically significant.

These data combined with the data of a study conducted by **McCauley**[193] who reported that diagnostic arthroscopy has a 1.4% (six of 433) major complication rate, with possible complications that include nerve damage, reflex sympathetic dystrophy, infection, hemarthrosis, adhesions, deep venous thrombosis, and instrument breakage; made our clinicians avoid diagnostic arthroscopy and MR arthrographic assessment of symptomatic patients following surgically managed meniscus.

Among the cases of torn meniscus we diagnosed bucket-handle tear of the posterior horn of the medial meniscus due to the presence of the following signs: medially displaced meniscal fragment in the intercondylar notch and larger posterior horn in sagittal view.

These diagnostic criteria are matching with a review done by **Fox**[25] who mentioned the following signs for diagnosis of bucket-handle tear: the double PCL sign with a sensitivity of27% to 44% and a specificity of 98% to 100%, the fragment in notch sign with a sensitivity of 60% to 98% and specificity of 73% to 82%, the absent bow tie sign with a sensitivity of 58% to 98% and a specificity of 62% to 100%, truncated meniscus in coronal image, the disproportional posterior horn sign is present when there is a larger posterior horn on sagittal images closer to the root attachment than peripherally, presumably because of a centrally displaced fragment of the more peripheral posterior horn, The flipped meniscus sign, which occurs when the fragment is flipped anteriorly adjacent to the ipsilateral anterior horn, The anterior horn should not measure greater than 6 mm in height; if it does, this should be considered.

It also matches with the criteria mentioned by **Nguyen et al**[203] who mentioned the following MRI signs: an absent bow tie, a fragment within the intercondylar notch, a double PCL, a double anterior horn or flipped meniscus, and a disproportionally small posterior horn.

Another case was diagnosed as flap tear with flipped meniscal fragments in the superior and inferior gutters. A flap tear or a displaced flap tear is a term that is used often to describe a short-segment, horizontal meniscal tear with fragments either displaced into the notch or into the superior or inferior gutters.

Flap tears are unstable and are important to recognize and describe, especially if the flap of meniscal tissue extends into the inferior gutter because this is a difficult area for the surgeon to visualize so it can be easily overlooked.

These results are supported by **Nguyen et al**[203] and **Fox**[25] who said that small free fragments and flaps can be missed at arthroscopy. Therefore, identification of these fragments before surgery is imperative, as retention of a meniscal flap often results in persistent pain and potential knee locking. Flap tears occur six to seven times more frequently in the MM, where in two-thirds of cases, fragments are displaced posteriorly (near or posterior to the PCL); in the remaining cases, fragments course into either the intercondylar notch or superior recess.

Findings not related to operational procedure in group II (meniscal surgery)

Meniscal tear was diagnosed in 2 cases (10%); 5 cases of ACL tear (25%); 1 case of ACL degeneration (5%); one case of ACL ganglion (5%); 11 case of articular cartilage lesion (55%); 2 cases of sprained medial collateral ligament (10%); 1 case of Hoffa's pad of fat impingement (5%); 2 cases of Baker's cyst (10%), and 1 case of patellar cartilage lesion (5%).

In this study we diagnosed two cases of meniscal tears in group II patients in which the torn meniscus was not the previously managed one.

We diagnosed torn native anterior cruciate ligament depending on the following criteria: discontinuous fibers, non visible fibers, and abnormal slope of the ligament. The sagittal plane is most helpful for evaluation of the linear configuration of the ACL fibers. Axial and coronal images also confirm the findings seen on sagittal images. A torn ACL fiber has increased T2-weighted signal and an abnormal contour. In some full-thickness tears, an amorphous mass replaces the discrete ACL fibers. Fluid can fill the gap between the fibers of a full-thickness tear.

Associated injuries and findings include bone bruises, fractures, meniscal tears, anterior subluxation of the tibia, and other ligament injuries. Bone bruises typically are seen at the midlateral femoral condyle and posterior lateral tibial plateau, although the location can vary, based on injury mechanism. An impaction fracture along the lateral femoral condyle, referred to as the ‘‘deep sulcus sign’’, typically measures more than 2 mm in depth before being a significant indicator of ACL tear.

Associated meniscal tears are located within the posterior horn of either the medial or lateral meniscus. Associated soft tissue injuries include damage to the medial collateral ligament and posterolateral corner structures. The tibia can sublux anteriorly with respect to the femur, causing the ‘‘anterior tibial translocation sign’’. More than 5 to 7 mm of anterior translocation has a high association with an ACL tear. The anterior translocation of the tibia can cause the posterior horn of the lateral meniscus to be uncovered, and may also cause the PCL to buckle.

These MRI signs are collected from previous studies done by **Roberts et al**,[12] **Moore**,[11] and **Chiu**.[75]

In this study we diagnosed one case of mucoid degeneration of the anterior cruciate ligament due to the presence of bulky fusiform ligament expressing high signal intensity along its course with still detected intact fibers. This patient complained of pain and inability to fully flex the knee.

Papadopoulou,[204] described the Celery Stalk Sign when subtle linear low-signal-intensity fibers course parallel to the long axis of the otherwise hyperintense ligament. The ligament retains its normal orientation. He also stated the difference between mucoid degeneration and chronic or acute interstitial tear at MR imaging. While abnormal signal intensity of the ACL is one of the primary signs of a tear but, unlike tears, in mucoid degeneration there is no discontinuity of the fibers, and secondary signs of a tear are absent.

Hsu, CJ et al[205] stated that the finding of mucoid degeneration of the ACL on MRI showed ill-defined ACL, increased girth compared to normal, increased signal intensity on all sequences, normal orientation of the ligament, and celery-stalk appearance.

In this study we diagnosed one case of ACL ganglion cyst when we found a well defined oblong shaped intra-ligamentous fluid signal intensity cyst having its long axis parallel to the direction of the anterior cruciate ligament fibers.

Our finding matched with **Hsu, CJ et al**[205] who described the lesion on MRI as intra-ligamentous ganglion of the ACL may appear fluid-filled, with low T1-weighted images and high T2- and proton-weighted images, and could be sharply demarcated with homogeneous appearance.

In a study conducted by **Bergin et al**[82] for two years upon 74 patients (36 men and 38 women) with a mean age 42 (age range 19-66). Eighteen patients (24%) had features consistent with anterior cruciate ligament mucoid degeneration only. Twenty-six patients (35%) had MRI features of both anterior cruciate ligament ganglia and anterior cruciate ligament mucoid degeneration.

In this study we diagnosed 11 case of articular cartilage lesion among group II patients with variable affection involving the articular surface of the medial and lateral femoral condyles as well as a case of patellar cartilage lesion. We found that the intermediate weighted fat suppression sequence is very good in the morphologic assessment of the articular cartilage lesions because of its sensitive to bone marrow changes; it has excellent discrimination of the bone, cortex, cartilage and fluid signal intensity. Diagnosis was done when there was discontinuity of the articular cartilage with evidence of fluid filled gap and possible underlying reactive marrow edema. Milder degenerative cartilage changes are diagnosed when there is fissuring of the articular cartilage with thin fluid signal intensity fissures.

Yulish et al[206] showed that conventional SE MR imaging was an accurate means with which to examine the posterior patellar cartilage when compared with arthroscopic results.

Tyrrell et al[207] found that fast 3D MR images show good correlation with arthroscopic findings in terms of high-grade cartilaginous lesions only.

A variety of 3D techniques subsequently were developed, including the 3D spoiled gradient-echo (or SPGR), 3D double-echo steady-state (or DESS), 3D balanced steady-state free precession (or SSFP), and 3D driven-equilibrium Fourier transform techniques. The 3D spoiled gradient-echo sequence was widely considered the standard for quantitative morphologic assessment of knee cartilage because of its high accuracy when compared with that of arthroscopy.

Huang and Schweitzer[208] stated that currently, two-dimensional intermediate-weighted or T2-weighted fat-suppressed fast-spin-echo (FSE) sequences are most commonly used in clinical practice to evaluate morphologic cartilage. Fat suppression provides a wider range of signal intensities in the articular cartilage and reduces chemical shift artifacts. An intermediate-weighted sequence yields higher intrinsic cartilaginous contrast than does a pure T2-weighted sequence.

In this study we diagnosed one case of supero-lateral Hoffa's pad of fat impingement when we found edema at its superolateral aspect with minimal fluid signal intensity.

In a retrospective study done by **Subhawong et al**[209] over a period of two months upon 47 patients with age range from 14 to 50 years, he found 25 of 50 patients (50%) exhibited edema like T2 hyperintense signal in the superolateral portion of Hoffa's fat pad.

In this study we diagnosed two case of Baker's cyst which might be blamed for the patient's pain. However the pre-operative imaging studies were not available to verify their initial presence. We also diagnosed one case of sprained medial collateral ligament due to the presence of high signal intensity in fluid sensitive sequences superficial to the medial collateral ligament with intact fibers.

Group III

Articular cartilage lesions occur commonly. They may be symptomatic or clinically silent. Many chondral lesions are first diagnosed at arthroscopy.

Since articular cartilage is relatively avascular, it has a limited ability to repair itself. Some initially asymptomatic chondral lesions degenerate and become symptomatic with time. The aim of cartilage repair is to restore the functional properties of the chondro-osseous unit.

Mosaicplasty is a procedure in which osteochondral plugs are harvested from non–weight-bearing areas such as the lateral femoral condyle or the trochlea and transplanted in an articular defect in the same person. This procedure is performed most frequently in the knee and ankle joints and is indicated for the repair of cartilage defects of 1–4 cm2, osteochondritis dissecans, and Osteonecrosis.

In our study we had 4 patients who underwent mosaicplasty. In each case we assessed the adequacy of graft filling and peripheral integration which was present in 100% of cases, where the grafts show homogenous fatty signal and there was no fluid signal intensity gaps between the graft and host bone; the restoration of normal curvature 50%. No single case of graft displacement and two cases showed graft edema 50% which can be a normal finding 1 to 3 years post operative.

In a review done by **Choi et al**[44] described the following: evaluation of a transplanted osteochondral autograft should include assessments of the degree of defect filling by the osteochondral plug, the peripheral integration of the reparative cartilage and bone, the cartilage surface contour, and the morphologic characteristics of the autologous bone.

Choi et al[44] stated that MR findings associated with osteochondral autograft transplantation include bone marrow edema in and around the graft, which occurs in approximately 50% of patients during the first 12 months, with a gradual reduction thereafter. Persistent edema has been observed in a small number of cases as late as 3 years after the procedure Joint effusion and synovitis may persist for more than 2 years. The presence of subchondral cysts with the signal intensity of fluid, the persistence of signal intensity indicative of edema within the subchondral bone, or both are suggestive of poor integration of the graft with native bone. Complications that may be detected at MR imaging include Osteonecrosis of the graft.

Assessment of the donor site was for any possible complication and to assess the degree of filling of t harvested graft.

Other findings: one case of meniscal tear (25%); two case of osteoarthritis (50%) and three cases of chondromalacia patellae (75%).

SUMMARY

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Magnetic resonance (MR) imaging plays a definite role in the evaluation of the knee in patients with persistent or recurrent pain after surgical repair of internal derangements due to affection of the articular cartilage, the anterior cruciate ligament (ACL), the posterior cruciate ligament (PCL), the medial and lateral menisci.

The aim of this study was to evaluate the role of MRI in symptomatic patients following operative management of internal knee derangement.

This study included 50 patients (41 males and 9 females) who were complaining after undergoing ACL reconstruction, meniscal surgery and articular cartilage repair surgery in the period between 2011 and 2014.

Patients were divided into three groups according to the operational procedures. Group I included 26 patients who underwent ACL reconstruction surgery. Group II included 20 patients who underwent meniscal surgery and group III included 4 patients with articular cartilage repair procedures.

The presenting complaints of patients were pain in 48 patients (96.0%); instability in 11 patients (22.0%); locking 5 patients (10.0%).

High field MRI evaluation for the patients was performed with a 1.5 T dedicated system using a transmit-receive extremity coil. The knee was placed in 10–15 degree external rotation (to orient the ACL with the sagittal imaging plane). The same scanning protocol was used for all patients.

Coronal oblique reconstruction from sagittal proton density.

Findings related to operational procedure in ACL group were as follows: Graft signal was found in 7 patients (4 of them were normal and 3 reflected graft impingement); graft tear was found in 11 patients of which 3 cases of partial tear and 8 cases of complete tear; abnormal tunnel position 6 patients; anterior tibial translation 6 patients; tibial tunnel cyst in 2 patients; femoral tunnel cyst 2 patients; screw failure in 4 patients and 1 case of arthrofibrosis.

Findings not related to operational procedure in ACL group were meniscal tear in 17 patients; articular cartilage lesion in 11 patients; patellar cartilage lesion in 5 patients; sprained patellar retinaculum in 1 patient; and 1 patient patellar tendinosis.

In the group of patients who had meniscal surgery. All the five patients who had meniscal repair surgery showed re-tear.

Among the fifteen patients who had partial meniscectomy 4 of them had re-tear.

While other findings included: Meniscal tear in 2 cases; 5 cases of ACL tear; 1 case of ACL degeneration; one case of ACL ganglion; 11 case of articular cartilage lesion; 2 cases of sprained medial collateral ligament; 1 case of Hoffa's pad of fat impingement; 2 cases of Baker's cyst, and 1 case of patellar cartilage lesion.

In patients who had Mosaicplasty we assessed the following: Adequate graft filling: 4 cases, restoration of normal radial curve: 2 cases, displacement of the graft: 0 case, peripheral integration: 4 cases, graft edema: 2 cases.

MR imaging is the preferred imaging modality for evaluating symptomatic patients following management of internal knee derangement, with high accuracy reported in most studies. Two-dimensional intermediate- weighted or T2-weighted fat-suppressed fast-spin-echo (FSE) sequences are most commonly used in clinical practice to evaluate morphologic cartilage and other causes of internal derangement.