Bibliographic Cite	PMID Link	Literature Type	Level of Evidence	Purpose	Population	Intervention and Outcome Measures	Results / Recommendations	Study Limitiations
Kim YS, Kim YB, Kim TG, Lee SW, Park SH, Lee HJ, Choi YJ, Koh YG. Reliability and validity of magnetic resonance imaging for the evaluation of the anterior talofibular ligament in patients undergoing ankle arthroscopy. Arthroscopy. 2015; 31(8):1540-1547.	25882510	Prospective, single-center, multiple-reader	Low	To analyze the reliability and validity of magnetic resonance imaging (MRI) for the detection of anterior talofibular ligament (ATFL) injuries in chronic lateral ankle instability by comparing its findings with arthroscopic findings.	79 patients who underwent MRI followed by subsequent arthroscopy for various ankle disorders between April 2012 and February 2013. Inclusion criterion was a patient who underwent MRI examination followed by subsequent arthroscopy of the same ankle within 50 days to ensure comparability between examinations. Patients with acute ankle sprains who underwent MRI less than 3 months after the injury were excluded because the conservative treatments including rehabilitation were performed primarily before the surgical intervention in these patients. For a more accurate evaluation of ATFL injuries using MRI, patients who had undergone previous surgical procedures and patients with os fibulae were also excluded.	Two radiologists independently assessed the ATFL on MRI, and the results of their MRI assessments were then compared with the arthroscopic findings, which were used as the standard of reference.	On arthroscopy, 55 ATFL injuries were identified in 79 patients. The interobserver reliability of detecting ATFL injuries with MRI was excellent (intraclass correlation coefficient, 0.915). MRI, as interpreted by readers A and B, showed a sensitivity of 83.6% and 76.4%, respectively; specificity of 91.7% and 83.3%, respectively; negative predictive value of 71.0% and 60.6%, respectively; positive predictive value of 95.8% and 91.3%, respectively; and accuracy of 86.1% and 78.5%, respectively. According to the location of the ATFL injury, the sensitivity of MRI for readers A and B was 72.7% and 63.6%, respectively, at the fibular attachment site; 80.0% and 66.7%, respectively, at the talar attachment site; and 100% at the midsubstance and multiple sites. All false-negative diagnoses of ATFL injuries were observed at the fibular or talar attachment site (9 cases for reader A and 13 cases for reader B). The authors conclude that MRI has excellent interobserver reliability (intraclass correlation coefficient, 0.915) for detecting ATFL injuries in patients in whom there is a clinical suspicion of chronic lateral ankle instability.	The number of ATFL injuries confirmed during arthroscopy (69.6%, n ¼ 55) was relatively small, which reduces the statistical significance of our data. This may influence assessment of the sensitivities of MRI in relation to the location of the ATFL injuries. Second, because only the patients who underwent MRI examination followed by arthroscopy were included in this study, there might be the inherent problem of selection bias. Furthermore, patients with acute ankle sprains who underwent MRI were excluded because they did not undergo arthroscopy; therefore, if those without surgical management were studied, there could be disparate results. A third limitation of this study is that partial tears were not clarified. Fourth, the arthroscopic diagnostic criteria for ATFL injuries are relatively subjective, and the ATFL evaluations were performed by only 1 surgeon. A fifth limitation of this study was the lack of a standardized protocol for ankle positioning during MRI.
Kirschke JS, Braun S, Baum T, et al. Diagnostic value of CT arthrography for evaluation of osteochondral lesions at the ankle. Biomed Res Int. 2016; 2016:3594253.	27891511	Retrospective, single-center, multiple-reader	Low	To retrospectively determine the diagnostic value of computed tomography arthrography (CTA) of the ankle in the evaluation of (osteo)chondral lesions in comparison to conventional magnetic resonance imaging (MRI) and intraoperative findings.	79 patients referred for multidetector CT of the ankle between July 2004 and July 2015. Inclusion criteria were CTA of the ankle performed at our institution and an available MRI examination of the same ankle performed within 12 months prior to or 3 months after CTA (3patients received CTA > 6 months after MRI). Subjects were excluded if surgery was performed between acquisition of MRI and CTA. Subjects with CT scans of the ankle without arthrography, as well as subjects without MR examinations, were excluded.	Intra-articular injection of contrast media was performed under fluoroscopic guidance bymeans of a medial approach. CT images were acquired by using either a clinical whole-body 256-row CT scanner or a clinical 128-row Siemens SOMATOM Definition AS. MR imaging protocols varied, since some of the patients were referred to the sports orthopedics department with existing MR examinations. MR images were transferred on PACS workstations and evaluated semiquantitatively by two musculoskeletal radiologists independently. Osteochondral lesions at the tibia and talus were scored on CTA and MRI including the parameters cartilage defect depth, cartilage defect size, bony defect depth, and bony defect size. Statistical analysis included sensitivity analyses and Cohen's kappa calculations.	On CTA, 41/79 and 31/79 patients had full thickness cartilage defects at the talus and at the tibia, respectively. MRI was able to detect 54% of these defects. For the detection of full thickness cartilage lesions, interobserver agreement was substantial (0.72 ± 0.05) for CTA and moderate (0.55 ± 0.07) for MRI. In surgical reports, 88–92% and 46–62% of full thickness defects detected by CTA and MRI were described. CTA findings changed the further clinical management in 15.4% of cases. The authors conclude that, when compared to conventional MRI, CTA improves detection and visualization of cartilage defects at the ankle and is a relevant tool for treatment decisions in unclear cases.	The major limitation of the present study is the retrospective design. Due to the retrospective design, there was no standardized reporting of osteochondral defects in the surgical report. A second limitation is the varying MRI quality and the differences in MR imaging protocols due to different referring centers.
Koc A, Karabiyik O. MRI evaluation of ligaments and tendons of foot arch in talar dome osteochondral lesions. Acta Radiol. 2018; 59(7):869-875.	28882059	Prospective, multi-center, multi-reader	Low	To investigate the pathologies of main ligaments and tendons that support the foot arch in sprained ankles, by reviewing magnetic resonance imaging (MRI) studies and comparing the results in two groups of patients, with and without OCLT.	316 patients selected from a population of patients referred to the orthopedic clinics between May 2014 and January 2016 with complaints of ankle pain and swelling with a previous history of ankle sprain. Patient selection was based on the following criteria: healthy individuals with no known systemic disease; no history of ankle surgery; with no specific job, congenital or acquired foot deformity which can predispose to chronic ankle instability. The group with OCLT comprised 158 ankles in 158 patients (78 women, 80 men; age range=19–78 years; average age=53.5 years) and the group without OCLT comprised 158 ankles in 158 patients (68 women, 90 men; age range=18–77 years; average age=51.1 years).	Magnetic resonance imaging (MRI) of the ankle was performed in all patients. Images were evaluated for pathologic findings of the plantar fascia, short and long plantar ligaments, spring ligament, sinus tarsi, and ankle tendons supporting the foot arch. According to MRI images, two groups of patients were formed as 158 with OCLT and 158 without OCLT. All OCLT were recruited regardless the anatomic site and size of the lesion.	Plantar fascia, short plantar ligament, and spring ligament abnormalities were seen in 50 (31.6%), 28 (17.7%), and 60 (38%) patients with OCLT, and in nine (5.6%), three (1.9%), and 18 (11.4%) patients without OCLT, respectively (P<0.05). Sinus tarsi and tendon abnormalities were seen in 11 (6.7%) and nine (5.7%) patients with OCLT, and in eight (5%) and eight (5%) patients without OCLT, respectively (P>0.05). Two or more associated abnormalities were present in 50 (31.6%) patients with OCLT and in 11 (6.7%) without OCLT (P<0.05). The authors conclude that plantar fascia, short plantar ligament, and spring ligament abnormalities were commonly seen in patients with OCLT on MRI, while sinus tarsi and tendon abnormalities were not. Concomitant pathologies have an increased incidence in patients with OCLT.	First, evaluating more than one structure, different anatomic orientation, and adjacency of some certain ligaments all brought challenges in the investigation. Another limitation of the study was inhomogenous patient distribution according to OCLT stages, because of its prospectivity. A further limitation of the study is that authors note they have not correlated stage, size, and site of the OCLT with ligamentous and tendinous injury.
Leung KH, Fang CX, Lau TW, Leung FK. Preoperative radiography versus computed tomography for surgical planning for ankle fractures. J Orthop Surg (Hong Kong). 2016;24(2):158-162. doi:10.1177/1602400207	27574254	Retrospective, consecutive, single-center, multiple-reader	Low	To review preoperative radiography and computed tomography (CT) of the ankle in 69 patients who underwent surgery for ankle fractures to determine the value of CT in diagnosis and surgical planning.	Preoperative radiography and CT of the ankle of 46 women and 23 men aged 17 to 90 (mean, 48.8) years were reviewed	CT was deemed necessary when radiographs showed the following features: (1) comminuted fracture of the medial malleolus involving the tibial plafond, (2) comminuted fracture of the posterior malleolus, (3) presence of loose bodies, and/or (4) suspected Chaput or Volkman fracture fragment. Two orthopaedic surgeons independently reviewed the radiographs to look for any of the above features for which CT was indicated. In patients whose radiographs did not show any of the above features, each surgeon formulated a surgical plan based on radiographs alone and decided if any modification was needed after reviewing the CT scan	Based on radiographs of the 69 patients, 19 (28%) patients had features of posterior malleolar comminution (n=7), medial malleolar comminution (n=7), suspected Chaput fracture fragment (n=1), suspected Volkman fracture fragment (n=1), and combination of 2 lesions (n=3), and were deemed to require CT. In 10 (20%) of the remaining 50 patients, the surgical plan was modified after review of the CT scan. The intra- and inter-observer agreement was good to excellent. / Radiography alone is not adequate for surgical planning for ankle fractures. More accurate imaging tools such as CT are needed to enable a more accurate diagnosis and surgical planning	The limitation of the study is its applicability because of its small sample size, retrospective design and single center.
Liao D, Xie L, Han Y, et al. Dynamic contrast-enhanced magnetic resonance imaging for differentiating osteomyelitis from acute neuropathic arthropathy in the complicated diabetic foot. Skeletal Radiol. 2018;47(10):1337-1347. doi:10.1007/s00256-018-2942-4	29654348	Prospective, single-center, multiple-reader	Low	To investigate the diagnostic value of dynamic contrast-enhancedMRI (DCE-MRI) in differentiating osteomyelitis from acute neuropathic arthropathy in the diabetic foot.	30 diabetic foot patients, with a mean age of 51 years	The patients all underwent clinical examinations, laboratory examinations and DCE-MRI. The DCE-MRI parameters (Ktrans, Kep and Ve) of the regions of acute neuropathic arthropathy and osteomyelitis were calculated. Receiver operating characteristic curves (ROCs) were used to identify the DCE-MRI parameters that showed the highest accuracy in differentiating the acute neuropathic arthropathy from the osteomyelitic regions. Pearson correlation coefficients were used to assess the correlations among the DCEMRI parameters, the level of C-reactive protein (CRP) and the erythrocyte sedimentation rate (ESR).	The Ktrans, Kep and Ve values of the osteomyelitic regions were higher than those of the acute neuropathic arthropathy regions, and significant differences were found between the two groups (P = 0.000, P = 0.000, P = 0.000). The ROC analysis showed that Ktrans and Ve performed best in differentiating osteomyelitis from acute neuropathic arthropathy, both with an area under the curve of 0.938. The Pearson correlation coefficients showed that the DCE-MRI parameters correlated significantly with the level of CRP and ESR (P = 0.000, P = 0.014, P = 0.000; P = 0.000, P = 0.000, P = 0.013)./ The results showed that DCE-MRI may provide reproducible parameters that can reliably differentiate osteomyelitis from acute neuropathic arthropathy.	There were several limitations to this study. First, the sample size was small. Second, the calculated DCE parameters of bony lesions in the diabetic foot close to surrounding soft-tissue lesions lead to false-positive results. Third, the intra-observer variability was not calculated in the study. Last, as high temporal resolution is needed for DCE-MRI postprocessing to improve the accuracy of the generated maps, the slice coverage of a DCE-MRI sequence is limited. As shown in this work, it is likely that more advanced imaging methods can be used to provide more reliable and accurate diagnoses in patientswith the complicated condition of the diabetic foot.
Meacock L, Petrova NL, Donaldson A, et al. Novel Semiquantitative Bone Marrow Oedema Score and Fracture Score for the Magnetic Resonance Imaging Assessment of the Active Charcot Foot in Diabetes. J Diabetes Res. 2017;2017:8504137. doi:10.1155/2017/8504137	29230422	Retrospective, single-center, multiple-reader	Low	To devise semiquantitative bone marrow oedema (BMO) and fracture scores on foot and ankle MRI scans in diabetic patients with active osteoarthropathy and to assess the agreement in using these scores	There were 35 males and 10 females, 14 had type 1 diabetes, and 31 had type 2 diabetes. The mean age and duration of diabetes was 55 years (range 27–76) and 17 years (range 1–40), respectively. The mean glycated HbA1c was 68 ± 15.3 mmol/mol (mean ± SD). The estimated glomerular filtration rate was below 60 ml/ min in 10 patients. All patients presented with an active-stage Charcot foot —eleven patients presented with grade 0 (X-ray normal and MRI abnormal) and 34 patients presented with grade 1 Charcot foot (X-ray abnormal and MRI abnormal) in agreement with the new classification based on MRI	Three radiologists assessed 45 scans (Siemens Avanto 1.5T, dedicated foot and ankle coil) and scored independently twenty-two bones (proximal phalanges, medial and lateral sesamoids, metatarsals, tarsals, distal tibial plafond, and medial and lateral malleoli) for BMO (0—no oedema, 1—oedema < 50% of bone volume, and 2—oedema > 50% of bone volume) and fracture (0—no fracture, 1—fracture, and 2 collapse / fragmentation). Interobserver agreement and intraobserver agreement were measured using multilevel modelling and intraclass correlation (ICC).	The interobserver agreement for the total BMO and fracture scores was very good (ICC = 0.83, 95% confidence intervals (CI) 0.76, 0.91) and good (ICC = 0.62; 95% CI 0.48, 0.76), respectively. The intraobserver agreement for the total BMO and fracture scores was good (ICC = 0.78, 95% CI 0.6, 0.95) and fair to moderate (ICC = 0.44; 95% CI 0.14,0.74), respectively. The proposed BMO and fracture scores are reliable and can be used to grade the extent of bone damage in the active Charcot foot.	First, the interobserver reliability is limited. The widespread BMO is a readily identifiable MRI feature on STIR images, whereas identifying fractures and collapse of the articular surface, particularly in the tarsal bones, can be more difficult, especially where large field-of-view images are used, and this requires experience with Charcot MRI scans. Secondly, MRI scans were carried out 2 weeks after clinical presentation and initiation of offloading. Therefore, the extent of bone abnormalities detected on MRI may not fully reflect the initial pathological lesion or could have been affected by casting therapy

Nosewicz TL, Beerekamp MSH, De Muinck Keizer R-JO, et al. Prospective Computed Tomographic Analysis of Osteochondral Lesions of the Ankle Joint Associated With Ankle Fractures. Foot Ankle Int. 2016;37(8):829-834. doi:10.1177/1071100716644470	27113606	Prospective, single-center, single-reader	Low	To detect OCLs following ankle fracture, to associate fracture type to OCLs and to investigate whether OCLs affect clinical outcome.	100 ankle fractures requiring operative treatment were prospectively included (46 men, 54 women; mean age 44 ± 14 years, range 20-77).	All ankle fractures (conventional radiography; 71 Weber B, 22 Weber C, 1 Weber A, 4 isolated medial malleolus and 2 isolated posterior malleolus fractures) were treated by open reduction and internal fixation. Multidetector computed tomography (CT) was performed postoperatively. For each OCL, the location, size, and Loomer OCL classification (CT modified Berndt and Harty classification) were determined. The subjective Foot and Ankle Outcome Scoring (FAOS) was used for clinical outcome at 1 year.	OCLs were found in 10/100 ankle fractures (10.0%). All OCLs were solitary talar lesions. Four OCLs were located posteromedial, 4 posterolateral, 1 anterolateral, and 1 anteromedial. There were 2 type I OCLs (subchondral compression), 6 type II OCLs (partial, nondisplaced fracture) and 2 type IV OCLs (displaced fracture). Mean OCL size (largest diameter) was 4.4 ± 1.7 mm (range, 1.7 mm to 6.2 mm). Chi-square analysis showed no significant association between ankle fracture type and occurrence of OCLs. OCLs did occur only in Lauge-Hansen stage III/IV ankle fractures. There were no significant differences in FAOS outcome between patients with or without OCLs / Ten percent of investigated ankle fractures had associated OCLs on CT. Although no significant association between fracture type and OCL was found, OCLs only occurred in Lauge-Hansen stage III/IV ankle fractures. With the numbers available, OCLs did not significantly affect clinical outcome at 1 year according to FAOS.	There are limitations to this study. The study result could not be extrapolated to conservatively treated ankle fractures. CT imaging was analyzed one time by 1 observer only. With the numbers available in this study and the relatively low incidence of osteochondral lesions in ankle fractures, it was not possible to assess the reliability of detecting osteochondral lesions on CT. Possible intra- and interobserver variability might thus have influenced results. Patients with previous ipsilateral ankle distortions were not excluded, and thus may have overestimated our results as osteochondral lesions may occur following distortion.However, only 1 patient with an osteochondral lesion reported a previous ipsilateral ankle distortion. Although osteochondral lesions in this study did not influence clinical outcome according to FAOS at 1 year, this study with regard to the numbers available might not be sufficiently powered to find such a difference. Furthermore, a longer follow-up might show different clinical results. Also, the FAOS has not been validated for outcome following ankle fractures. Finally, in Lauge-Hansen supination/exorotation type II and III fractures without medial clear space widening, no specific clinical examination of the medial ankle and no radiographically assisted gravity or external rotation stress tests were performed. This may have underestimated the incidence of supination/external rotation stage IV ankle fractures in the cohort, as positive clinical and radiographic stress tests are suggestive of deltoid ligament injury.
Ohashi K, Sanghvi T, El-Khoury GY, et al. Diagnostic accuracy of 3D color volume-rendered CT images for peroneal tendon dislocation in patients with acute calcaneal fractures. Acta Radiol. 2015;56(2):190-195. doi:10.1177/0284185114522224	24493866	Retrospective, single-center, multiple-reader	Low	To test diagnostic accuracy of 3D color VR CT images of ankle for peroneal tendon dislocation in patients with acute calcaneal fractures	The study consisted of 121 ankle CT studies from 105 consecutive patients (85 men, 20 women; mean age, 42 years; age range, 16–75 years) with acute calcaneal fractures	Peroneal tendon dislocation was diagnosed on multiplanar CT images by consensus of two experienced musculoskeletal radiologists, which served as the reference standard. Three other musculoskeletal radiologists independently reviewed 3D images alone on a workstation. The readers determined whether or not there was peroneal tendon dislocation using three degrees of certainty (definite, probable, and possible). Diagnostic performance of 3D images for peroneal tendon dislocation was evaluated by calculating the sensitivities, specificities, and area under the receiver-operating characteristic (ROC) curve	48 (40%) out of 121 studies showed peroneal tendon dislocation based on the expert readings using multiplanar reformatted images. Sensitivities/ specificities of 3D images measured 0.92/0.81, 0.88/0.90, and 0.81/0.92 for three readers, respectively. The area under the proper binormal ROC curve based on all three readers (0.93, 0.94, and 0.92) measured 0.93 with a 95% confidence interval of 0.89–0.98/ Diagnostic accuracy of 3D images is comparable to, but not as good as that of MPR images for the diagnosis of peroneal tendon dislocation in patients with acute calcaneal fractures	Limitations of the study include the use of MPR images of CT as the reference standard for the diagnosis of peroneal tendon dislocation. Diagnosing peroneal tendon dislocation with MPR images is unlikely to be perfect and any differences in performance between the MPR images and 3D VR images would be counted against the 3D VR images. The clinical significance of the CT findings of peroneal tendons in the study population is unknown, since the author made no clinical correlation. In patients with severe calcaneal fractures, peroneal tendon dislocation may not manifest clinically. Likewise, transient peroneal tendon dislocation with spontaneous reduction can be missed using CT.
Özer M, Yıldırım A. Evaluation of the Prevalence of Os Trigonum and Talus Osteochondral Lesions in Ankle Magnetic Resonance Imaging of Patients With Ankle Impingement Syndrome. J Foot Ankle Surg. 2019;58(2):273-277. doi:10.1053/j.jfas.2018.08.043	30612863	Retrospective, multi-center, mutiple-reader	Low	To determine the possible relationship between the impingement syndrome and the prevalence of os trigonum and OCLT in specific groups.	A total of 333 patients met the inclusion criteria and were included. 1. Not having ankle major trauma and instability history 2. Persistence of complaints after ≥3 weeks of conservative treatment (nonsteroidal anti-inflammatory medication, rest, lifestyle/activity modification, cold application) 3. Being >13 years old (because the fusion of the secondary ossification center of talus may not be completed until the age of 13) 4. Being <65 years old (to exclude patients developing degenerative arthritis) 5. Not having positive findings in MRI other than the findings related to impingement (fractures, degenerative arthritis, avascular necrosis, Achilles tendon pathologies, Haglund's deformity, tarsal tunnel syndrome, sinus tarsi syndrome, and bone narrow edema unrelated to impingement) 6. Having a body mass index of < 35 kg/m2	The presence of anterior ankle impingement syndrome (AAIS), posterior ankle impingement syndrome (PAIS), os trigonum, OCLT, and the location of OCLT were evaluated in a blinded manner on magnetic resonance imaging from patients clinically considered to be diagnosed with ankle impingement syndrome from January 2014 to July 2017. The patients were separated into specific groups according to the confirmation of their clinical diagnosis of ankle impingement syndrome on magnetic resonance imaging	The prevalence of os trigonum was found to be 1.3% in patients with PAIS(-) AAIS(+), 7.7% in patients with PAIS(-) AAIS(-), 63.3% in patients with PAIS(+) AAIS(-), and 81.1% in patients with PAIS(+) AAIS(+) (p < .001). The prevalence of OCLT was found to be 41.3% in patients with PAIS(-), AAIS(+), 23.1% in patients with PAIS(-) AAIS(-), 18.3% in patients with PAIS(+) AAIS(-), and 27% in patients with PAIS(+) AAIS(+) (p= .005)./ The study showed that for patients with isolated PAIS and AAIS combined with PAIS, the prevalence of os trigonum was 63.3% and 81.1%, respectively, which is more common than previously reported. For patients with isolated AAIS and PAIS, the prevalence of OCLT was 41.3% and 18.3%, respectively. Of the OCLTs combined with ankle impingement syndromes, 87.1% were medially located.	There were some limitations in the study. First, it was a retrospective comparative study. Secondly, because of the limited number of patients in the group with AAIS (-) PAIS(-), the author were not able to randomize the patients according to their ages. Thirdly, the evaluation of other anatomic variations (sloping posterior tibial plafond, enlarged tubercle [Stieda's], posteromedial accessory ossicles, os post peronei, os sub peroneal), which may be associated with PAIS, along with the size and type of os trigonum in further studies may ensure complete understanding of the occurrence mechanism of PAIS symptoms.
Park YH, Yoon MA, Choi WS, Choi GW, Hong SJ, Kim HJ. The predictive value of MRI in the syndesmotic instability of ankle fracture. Skeletal Radiol. 2018;47(4):533-540. doi:10.1007/s00256-017-2821-4	29196821	Retrospective, multi-center, multiple-reader	Low	To assess the use of magnetic resonance imaging (MRI) for syndesmotic instability in patients with unstable ankle fracture.	Twenty-nine (39%) patients were female, and 45 (61%) were male. Mean age was 37.6 years (range, 18 to 64). Sixty (81%) patients had Lauge-Hansen SER/Weber B type fracture, and 14 (19%) patients had Lauge-Hansen PER/Weber C type fracture.	The MRI findings of the syndesmotic ligament and the results of an intraoperative stress test were evaluated. Two musculoskeletal radiologists independently analyzed these three ligaments on the MRI scans while blinded to the results of the stress test. In cases of disagreement, the final grade of injury was decided by consensus.	26 patients had a positive result on the intraoperative stress test for syndesmotic instability. The MRI findings of the syndesmotic ligaments revealed that complete tear of the posterior inferior tibiofibular ligament (PITFL) was the most reliable predictor of syndesmotic instability (sensitivity, 74%; specificity, 78%; positive predictive value, 54%). Interobserver agreement for the intraoperative stress test and MRI assessment was excellent, except for the MRI findings of the interosseous ligament (62% agreement; kappa, 0.3).	There were three limitations in the study. First, not all patients underwent MRI for preoperative ligament assessment because this study was not prospectively designed. Therefore, there was a possible selection bias. Second, a single orthopedic surgeon performed the stress test, which could have biased the results. Although the re-analysis of the intraoperative radiographs showed an excellent kappa coefficient, the author did not use a standard force in the stress test. This might have resulted in an underestimation of the number of patients with a positive stress test, particularly in the group with partial ligament tear. Third, even though the two musculoskeletal radiologists independently analyzed the MRI image, there was a possibility of overdiagnosis because of the retrospective nature of this study.

Tan DW, The DJ, Chee YH. Accuracy of magnetic resonance imaging in diagnosing lateral ankle ligament injuries: A comparative study with surgical findings and timings of scans. Asia Pac J Sports Med Arthrosc Rehabil Technol. 2016; 7:15-20.	29264269	Prospective, single-center, multiple-reader	Low	To evaluate the accuracy of magnetic resonance imaging (MRI) in diagnosing lateral ankle ligament injuries and the effect of differences in time duration from injury to MRI.	82 patients who underwent lateral ligament reconstruction surgery at a high-volume tertiary institution from January 2012 to December 2014. The inclusion criteria were patients who (1) had a history of acute ankle sprain injury; (2) had residual symptoms of pain, swelling, or instability after conservative treatment including rest, analgesia, ankle guard, and physiotherapy for at least 6 weeks; (3) had positive clinical findings suggestive of ligamentous injury such as positive anterior drawer test and/or talar tilt test; (4) were evaluated with MRI prior to surgery as part of the departmental protocol and as an objective supportive investigation; and (5) subsequently underwent reconstruction of the ATFL and/or the CFL via a modified Brostr€om procedure. The exclusion criteria were (1) previous ankle surgeries; (2) previously diagnosed ankle ligament tears prior to current presentation; (3) new injury from time of MRI to surgery; (4) no MRI was performed prior to surgery due to reasons such as severe trauma or open injuries; and (5) presence of other injuries detected on MRI other than ATFL/CFL tears.	Patients were divided into either acute (3 months) or chronic (> 3 months) group based on injury interval. Findings were classified as normal, partial, or complete tears of the anterior talofibular ligament (ATFL) and the calcaneofibular ligament (CFL). Partial tear was defined as partial adhesion of the ligament fibres and a coarse cut fibre surface with intact continuity. Complete tear was defined as definite discontinuity of the ligament and adhesion of adjacent tissue. MRI results were compared with intraoperative findings and their accuracies were assessed using descriptive statistics.	The accuracy of MRI for partial and complete tears of the ATFL was 74% and 79%, respectively, with sensitivity and specificity of 64% and 86% for partial tears, and 78% and 80% for complete tears, respectively. The accuracy of MRI was 66% and 88% for partial and complete tears of the CFL with a sensitivity and specificity of 41% and 87% for partial tears, and 61% and 95% for complete tears, respectively. A decrease in the MRI accuracy was observed in the chronic group. The authors conclude that MRI is accurate in diagnosing ATFL injuries. It is specific but not sensitive for CFL tears. The accuracy is higher in the acute setting of 3 months or less from time of injury to MRI.	The relatively small number of patients included may have limited the analysis of the outcomes in each subgroup. Second, there is lack of control of interobserver variability in the interpretation of MRI results, which could increase the variability in MRI accuracy. Third, there may be an inherent bias in patient selection, because no patient will be operated on if they do not have symptoms of ankle instability, but this reflects the reality of practice. Lastly, this study mainly evaluated MRI reporting in a clinical setting and may not be a true reflection of the accuracy of the MRI in diagnosing lateral ligament injuries.
You JY, Lee GY, Lee JW, Lee E, Kang HS. An Osteochondral Lesion of the Distal Tibia and Fibula in Patients With an Osteochondral Lesion of the Talus on MRI: Prevalence, Location, and Concomitant Ligament and Tendon Injuries. AJR Am J Roentgenol. 2016;206(2):366-372. doi:10.2214/AJR.15.14861	26797365	Retrospective, multi-center, mutilple-reader	Low	To evaluate the prevalence and common location of a coexisting osteochondral lesion of the distal tibia and fibula and of associated abnormalities of the ankle ligaments and tendons on MRI in patients with an osteochondral lesion of the talus (OLT).	The study included 297 feet with an OLT (right foot, n = 133; left foot, n = 164) of 286 patients (184 males and 102 females; mean age, 41 ± 17 [SD] years; age range, 8–81 years).	Two readers reviewed the MRI examinations independently for the presence of an osteochondral lesion of the distal tibia and fibula and for concomitant ligament and tendon injuries. If an osteochondral lesion of the distal tibia and fibula was present, the reviewers also recorded the location -(zones 1–10) and stage. Interobserver and intraobserver reliabilities were assessed using kappa statistics. The associations between a coexisting osteochondral lesion of the distal tibia and fibula and an OLT or a concomitant ankle injury were evaluated using the chi-square test.	Readers A and B identified 61 (20.5%) and 47 (15.8%) coexisting osteochondral lesions of the distal tibia and fibula, respectively, with good interobserver (κ = 0.73) and excellent intraobserver (κ = 0.97) reliabilities. The most common location of a coexisting osteochondral lesion of the distal tibia and fibula was zone 4 (29.5%) by reader A and zone 2 (21.3%) by reader B. Stage I and stage IIA were common (> 85%). The frequency of osteochondral lesions of the distal tibia and fibula was not significantly different according to the location or stage of OLT. Abnormalities in the tibialis posterior tendon and in the anterior and posterior talofibular, calcaneofibular, and deltoid ligaments were significantly more common in patients with a coexisting osteochondral lesion of the distal tibia and fibula than in those with an isolated OLT ($p < 0.05$). A coexisting osteochondral lesion of the distal tibia and fibula is not rare on MRI in patients with an OLT and is related to a higher frequency of concomitant ankle ligament and tendon injuries	The study has several limitations. First, some of the retrospectively selected MRI examinations were performed at a tertiary medical center, leading to selection bias. Second, the data search in the study was based on initial radiology reports. Therefore, osteochondral lesions of the distal tibia and fibula that were missed on the initial MRI examinations were not included. Third, the true incidence of an osteochondral lesion of the distal tibia and fibula in the general population may not be explained using the results because the study was designed to establish the incidence of a coexisting osteochondral lesion of the distal tibia and fibula in patients with an OLT. Fourth, the experience level of the reviewers in the interpretation of MRI may have affected the detection of osteochondral lesions of the distal tibia and fibula. Finally, the diagnosis of osteochondral lesions of the distal tibia and fibula in this study was not proven by surgical findings or pathologic specimens.