Review Article Open Access

Hip P

have revolutionized the feld. These techniques enable clinicians to visualize the

conditions. The choice of imaging modality depends on clinical presentation an tailored approach that combines various techniques for a comprehensive diagram.

clinicians can ofer more accurate diagnoses, leading to enhanced treatment st

therapeutic interventions, and ultimately lethranging of the magnitude of the lether in aging modalities (Y-ray, magnetic lether lether in aging modalities (Y-ray, magnetic lether let

resonance imaging (MRI), computed tomography (CT), ultrasound, and scintigraphy) in studying intra-articular causes of hip pain.

Advanced Imaging Modalities

Computed tomography (CT): CT scans o er a more detailed three-dimensional view of the hip joint, making them valuable for assessing complex fractures, tumors, and abnormalities that may not be apparent on X-rays [4].

Magnetic resonance imaging (MRI): MRI is a non-invasive technique that uses magnetic elds and radio waves to create highly detailed images of the hip joint, including the surrounding so tissues, ligaments, and cartilage. It is especially useful for diagnosing conditions like labral tears, hip impingement, and in ammatory disorders.

Ultrasound: Ultrasonography can provide real-time images of the hip joint, making it a valuable tool for assessing so tissue structures, such as tendons, ligaments, and muscles [5]. It is o en used to diagnose conditions like bursitis and tendonitis.

Bone scintigraphy: is nuclear medicine technique involves injecting a small amount of radioactive material into the bloodstream, which accumulates in areas of increased bone activity [6]. It can help identify conditions like osteomyelitis or stress fractures.

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Positron emission tomography (PET) scans: PET scans are used in conjunction with CT scans to detect areas of increased metabolic activity in the hip joint, which can be indicative of conditions like infections or certain types of tumors.

Magnetic resonance arthrography (MRA): MRA combines the bene ts of MRI with the injection of a contrast agent into the hip joint to provide a more detailed assessment of structures like the labrum and articular cartilage [7].

Magnetic Resonance

Many pathological conditions of the hip are detected early by MRI due to its high so tissue resolution and sensitivity. Its accuracy in studying acute hip pain in children has proved to be superior to ultrasound and plan lm radiography. However, MRI accessibility and the need of sedation relegate its use to selected cases in which diagnosis is not clear with less demanding techniques. ese include di erentiating transient synovitis from a septic arthritis or osteomyelitis, diagnosis of in ammatory joint disease or bone tumors, and early detection and follow-up of Perthes disease [8].

MRI ndings correlate with prognosis in LCPD. ese include extent and distribution of epiphyseal necrosis, subchondral ossi ed nucleus fracture, involvement of the lateral pillar, and disturbance of physeal growth, including presence of transphyseal neovascularity or bridging.

Recent studies have been focused on the role of di usion weighted MRI because it does not need contrast medium administration. ADC ratio of the femoral metaphysis was positively correlated with the Herring classi cation. ADC ratio superior to 1.63 indicates bad prognosis with 89% sensitivity and 58% speci city [9].

In adult patients, MRI is currently playing a de nite role in the assessment of osteoarthritis. Although traditionally belonging to the arena of radiographs, the role of MRI has been stressed a er the term femoral acetabular impingement was coined in 2003. Growing interest has been focused in accurate diagnosis of the acetabular and femoral morphological abnormalities that may lead to early osteoarthritis.

Tailoring the Diagnosis

e choice of imaging modality depends on the patient's clinical presentation, the suspected underlying condition, and the physician's

judgment. O en, a combination of imaging techniques may be necessary to arrive at an accurate diagnosis [10]. For instance, a patient with chronic hip pain and suspected osteoarthritis may bene t from X-rays to assess joint space narrowing and bone spurs, followed by an MRI to evaluate so tissue damage and cartilage integrity.

Conclusion

e diagnosis of hip pain has evolved signi cantly over the years, thanks to advancements in medical imaging technology. From traditional radiography to advanced cross-sectional modalities like MRI and CT scans, healthcare providers now have a diverse toolbox to investigate and understan-1(o ina)9(n)a.023.90.111 Tw m(t f)-10(P(d un)4)