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EVALUATION OF THE CAUSES OF GROIN PAIN IN ORTHOPEDIC OUTPATIENT PRACTICE

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ABSTRACT

Background: Groin pain is a diagnostically complex clinical issue due to the region's anatomical intricacy and the convergence of musculoskeletal, neurological, and visceral systems. Although traditionally associated with athletes, groin pain is prevalent in general outpatient populations and is often underdiagnosed or misattributed due to overlapping symptoms and variable presentation. This study aimed to investigate the clinical characteristics and underlying etiologies of groin pain among patients presenting to outpatient clinics. **Aim of the study:** To provide a comprehensive understanding of the patterns and factors contributing to groin pain, which improved the diagnostic and therapeutic strategies in outpatient clinical settings. **Methods:** A cross-sectional observational study was conducted at Basrah Teaching Hospital over 12 months (June 2024–June 2025). Ninety-nine patients presenting with groin pain to outpatient and emergency departments were evaluated through comprehensive clinical assessments, physical examinations, laboratory testing, and radiological imaging. Patients with confirmed gynecological, urological, or gastrointestinal causes were excluded. **Results:** The cohort included (54) 54.5% females and (45) 45.5% males out of 99 patients, with a mean age of 39.14±20.71 years. Groin pain was predominantly unilateral (78.8%), moderate to severe in intensity (93.9%), and frequently radiated to the thigh (56.6%) or knee (25.3%). Common aggravating factors included weight-bearing and physical activity. Mechanical signs, especially the "C sign" (71.7%), were frequently observed. Imaging identified fractures (24.2%), while provisionally the most common cause of groin pain among the patients was fractures (26.26%). This was followed by avascular necrosis (AVN) (15.15%), and disc prolapse (14.14%). Hernias and osteoarthritic (OA) changes each contributed to (10.1%). Muscle strain was noted in (7.07%), while hip dislocation was diagnosed in (5.05%). Less frequent causes included lipoma and mesenteric adenitis, each with (3.03%), and abscess, metastasis of tumors, and urinary stones, each with (2.02%). **Conclusion:** Groin pain in outpatient settings is multifactorial, with musculoskeletal and spinal etiologies predominating. The findings emphasize the need for structured, multidisciplinary diagnostic protocols, particularly in non-athletic populations. Early imaging—especially MRI—and comprehensive clinical evaluation are crucial to accurate diagnosis and effective management. Broader epidemiological research and long-term follow-up are recommended to refine diagnostic strategies and therapeutic interventions.

KEYWORDS: Assessment, Etiology, Hip, Pain.

INTRODUCTION

Groin pain is defined as pain localized to the inguinal, pubic, or upper medial thigh region, and it represents a common yet diagnostically complex complaint in both orthopedic and general surgical practice.[1] The anatomical overlap of musculoskeletal, neurologic, urologic, and gastrointestinal structures in the groin makes clinical differentiation challenging and often necessitates multidisciplinary involvement.[2] Key etiologies include musculotendinous strain (adductor and

iliopsoas), inguinal-related pathologies (e.g., inguinal disruption or sportsman's hernia), femoroacetabular impingement, nerve entrapments, and less commonly, referred visceral pain or occult hernias.[3] Diagnostic delays are common due to symptom overlap, especially in athletes, where multiple pathologies may coexist and mimic each other.[4] Compounding these challenges is the historical inconsistency in terminology, with over 30 terms used in the literature to describe groin-related conditions, limiting comparability and evidence synthesis.[5] Recent efforts, such as the Doha agreement, have attempted to standardize clinical definitions into categories like adductor-, inguinal-, pubic-, and iliopsoas-related groin pain to support accurate diagnosis and treatment planning.[6] Despite these advances, significant research gaps remain in validating clinical tests, optimizing imaging protocols, and refining diagnostic algorithms that integrate both orthopedic and general surgical domains.

The study focuses on exploring the clinical characteristics and causes of groin pain among orthopedic outpatients. Its overarching goal is to provide a comprehensive understanding of the patterns and factors contributing to groin pain, improving diagnostic and therapeutic strategies in outpatient clinical settings.

2. PATIENTS AND METHODS

Ethical approval was obtained from the Department of Surgery of Medicine College of Basrah. All participants provided informed consent. Confidentiality was maintained through anonymized data collection and secure data storage.

This is a cross-sectional observational investigation aiming to explore the clinical characteristics and the underlying causes of groin pain among patients attending various outpatient services. The study was conducted at Basrah Teaching Hospital, a tertiary care center in southern Iraq. Data were collected over a 12-month period from June 2024 to June 2025, encompassing a diverse patient population attending the hospital's outpatient and emergency departments. The study population consisted of 99 patients who presented with groin pain. Patients were recruited consecutively from the outpatient clinics of orthopedics, urology, general surgery, pediatrics, and the emergency department, reflecting a multidisciplinary approach to groin pain assessment.

The study included of all ages and genders presenting with groin pain seen in the specified outpatient or emergency departments who consented to participate in the study. While patients with groin pain of confirmed gynecological origin (e.g., ovarian torsion, pelvic inflammatory disease), or patients with urological pathologies as the primary diagnosis (e.g., ureteric colic, urinary tract infections), as well as patients with gastrointestinal causes, such as inguinal hernia with no musculoskeletal involvement or appendicitis, or patients with infectious diseases presenting with systemic features unrelated to musculoskeletal pathology, additionally those with known malignancies metastasizing to the pelvis or patients with incomplete clinical data or refusal to participate were excluded from the study.

Data collection was performed through direct clinical assessment and chart review. A structured form was utilized to gather demographic information (age, gender, occupation), clinical presentation (onset, duration, character of pain), physical examination findings, diagnostic work-up (radiological, laboratory), provisional and final diagnoses, and department of referral. Each patient was evaluated by an orthopedic specialist in collaboration with the referring department where necessary.

All patients presenting with groin pain underwent a comprehensive clinical evaluation upon entry into the outpatient or emergency department. The evaluation process was standardized across the involved departments— orthopedics, general surgery, urology, pediatrics, and emergency medicine—to ensure consistency in assessment and documentation.

A detailed medical history was obtained from each patient or their caregiver, focusing on the following elements: • Pain Characteristics: Location, radiation, intensity (mild, moderate, severe by the visual analogue system), duration, onset (sudden vs. gradual), and progression. • Aggravating and Relieving Factors: Including physical activity, rest, positional changes, urination, or menstruation (in females). • Associated Symptoms: Such as fever, vomiting, urinary disturbances, gait alterations, or systemic symptoms. • Medical and Surgical History: Including previous episodes of groin pain, musculoskeletal disorders, urogenital conditions, hernia repairs, infections, or malignancies. • Medication Use and any history of recent trauma or strenuous physical activity. Physical Examination A focused physical examination was conducted, with each specialty contributing based on its domain expertise. This included: • General Inspection: Observation for asymmetry, swelling, erythema, gait abnormalities, or postural deformities. • Palpation: Systematic superficial and deep palpation of the inguinal region, pubic symphysis, and surrounding structures to localize tenderness and identify masses, hernias, or lymphadenopathy. • Abdominal and Pelvic Examination: Conducted where indicated, particularly in female patients or when gastrointestinal or genitourinary involvement was suspected. • Neurological Examination: When symptoms suggested nerve compression, radiculopathy, or referred pain from the spine. • Pediatric-Specific Examination: For children, age-appropriate evaluations were performed, including assessment for transient synovitis, developmental dysplasia, Perthes disease or slipped capital femoral

epiphysis. • Hip Assessment: Special tests are essential for identifying specific causes of groin pain and assessing hip joint pathology. Commonly used tests include: (Flexion, Adduction, Internal Rotation), FABER Test (Flexion, Abduction, External Rotation), Adductor Squeeze Test, Thomas Test, Resisted Straight Leg Raise, Palpation of the pubic symphysis and surrounding structures.

Initial diagnostic tests were guided by clinical findings and included: • Laboratory Investigations: Complete blood count (CBC), erythrocyte sedimentation rate (ESR), C-reactive protein (CRP), rheumatoid factor (RF), Human Leukocyte Antigens (HLA), and urinalysis to identify infection or inflammation. • Radiological Imaging: o Plain Radiographs: Pelvis, hip, and lumbar spine as a first-line tool. o Ultrasound: For evaluation of soft tissue masses, hernias, testicular pathology, or pelvic organs. o MRI or CT scans: Ordered selectively for cases with unclear diagnoses or suspected deep pelvic pathology, labral injuries, or neoplastic conditions. Each patient's evaluation culminated in a provisional diagnosis and referral or co-management by the appropriate specialty team. Orthopedic evaluation was reserved for patients whose findings indicated musculoskeletal involvement, following exclusion of non-orthopedic causes through this initial comprehensive evaluation.

The primary outcome was the causes of groin pain attributed to orthopedic etiologies. Secondary outcomes included: • Distribution of causes across specialties. • Common orthopedic diagnoses • Demographic and clinical correlations of groin pain patterns. • Severity of groin pain.

Data were analyzed using the Statistical Package for the Social Sciences (SPSS) software, version. Descriptive statistics were employed to summarize the demographic, clinical, examination, laboratory, imaging, and diagnostic characteristics of the study population. Categorical variables were presented as frequencies and percentages, while continuous variables were reported as means with standard deviations (mean ± SD). For variables with potential non-normal distributions, data dispersion was carefully assessed using measures of variability and visual plots.

3. RESULTS

The demographic data reflects a balanced gender distribution with females (54.5%) slightly outnumbering males (45.5%). The mean age is 39.14 years with a notably wide standard deviation of 20.71, indicating considerable age variability among participants. Occupation-wise, a significant proportion of the cohort are housewives (24.2%) and employees (33.3%), with students (11.1%) and nonemployees (23.3%) also notably represented. Medical history is predominantly negative (80.8%), although 8.1% have diabetes and 7.1% have hypertension. A small proportion reported a history of malignancy (4.0%). Surgical history is negative in 87.9% of cases. Steroid abuse is relatively common (23.2%), which could have clinical implications. Back pain and trauma histories are also prominent, reported in 41.4% and 36.4% of the sample, respectively, indicating a substantial burden of musculoskeletal and injury-related factors. As shown in table 1.

Table 1 - Demographic Characteristics

Variable		Frequency (No.99)	Percentage (%)
Age (Mean +SD)		39.14-20.71	
Sex	Male	45	45.5%
	Female	54	54.5%
Occupation	Employee	33	33.3%
	Non-employee	23	23.3%
	Retired	4	4.0%
	Student	11	11.1%
	Child	4	4.0%
	Housewife	24	24.2%
Past medical history	Diabetes mellitus	8	8.1%
	Hypertension	7	7.1%
	Malignancy	4	4.0%
	Others	80	80.8%
Past surgical history	Positive	12	12.1%
	Negative	87	87.9%
Steroid use	Positive	23	23.2%
	Negative	76	76.8%
Back pain history	Positive	41	41.4%
	Negative	58	58.6%
History of trauma	Positive	36	36.4%
	Negative	63	63.6%

The clinical presentation is dominated by groin pain, with nearly equal distribution between left (46.5%) and right (49.5%) sides, and a small minority presenting with back pain (4.0%). Symptom onset is more often gradual (57.6%) than sudden (42.4%). Pain severity is predominantly in the moderate (44.4%) to severe (49.5%) range, underscoring the clinical significance of the complaints. The mean duration of symptoms is 48.31 days with a wide standard deviation (47.65), indicating high variability in chronicity. Pain is primarily described as sharp (75.8%), with fewer cases of dull (21.2%) or throbbing (3.0%) pain. Referral patterns mostly involve the thigh (56.6%) and knee (25.3%), aligning with radicular or musculoskeletal sources. Aggravating factors are chiefly activity-related, including general activity (85.9%), weight-bearing (63.6%), and running (35.4%). Rest (78.8%) is the most common relieving factor. Radiation of pain primarily targets the knee (48.5%), which may indicate referred pain from hip or lumbar pathology. As shown in table 2.

Table 2 - Clinical Characteristics

Variable		Frequency (No.99)	Percentage (%)
Chiefs complain	Left groin pain	46	46.5%
	Right groin pain	49	49.5%
	Back pain	4	4.0%
Onset	Sudden	42	42.4%
	Gradual	57	57.6%
Severity	Mild	3	3.0%
	Mild-moderate	3	3.0%
	Moderate	44	44.4%
	Severe	49	49.5%
Duration (Mean+SD)		48.31-47.65 days	
Nature	Dull	21	21.2%
	Sharp	75	75.8%
	Thromping	3	3.0%
Referral	Back	6	6.1%
	Knee	25	25.3%
	Hip	4	4.0%
	Thigh	56	56.6%
	Testis	4	4.0%
	No referral	4	4.0%
Aggravated factors	Weight bearing	63	63.6%
	Activity	85	85.9%
	Running	35	35.4%
	Lifting	15	15.2%
	Sport strain	23	23.2%
	Kicking	19	19.2%
	High intensity movement	17	17.2%
Relived factors	Rest	78	78.8%
	Changing posture	33	33.3%
Radiated to	Knee	48	48.5%
	Buttocks	3	3.0%
	Trochanteric area	17	17.2%

The physical examination findings indicate that mechanical symptoms are commonly observed in the studied population. The most prevalent sign is the “C sign,” noted in 71.7% of participants, which is often associated with intra-articular hip pathology. Limping is also frequent (48.5%), suggesting functional impairment, likely due to pain or joint instability. Catching, a symptom indicative of labral pathology or intra-articular derangement, was present in 29.3% of cases, whereas locking, which may suggest mechanical obstruction within the joint, was relatively rare (7.1%). As shown in table 3.

Table 3 – Examination Finding Characteristics

Variable		Frequency (No.99)	Percentage (%)
Mechanical signs	Catching	29	29.3%
	Locking	7	7.1%
	Limbing	48	48.5%
	C sign	71	71.7%

Laboratory findings reveal a mean hemoglobin level of 11.24 (SD 1.74), suggesting that mild anemia may be present in the population, though clinical relevance would depend on reference ranges and individual patient context. White blood cell counts show a wide variability (mean 3266.48, SD 5112.56), raising concerns about either an error in data representation or the inclusion of outliers; further clarification is warranted. Serum calcium appears within expected physiological limits with a mean of 9.33 (SD 1.42). Rheumatoid factor and HLA tests are uniformly negative in all the tested patients, reducing the likelihood of autoimmune or seronegative arthropathies. Both ESR and CRP show marked increased, indicating a significant raising in systemic inflammation. Overall, the laboratory profile does not strongly indicate systemic inflammatory or infectious disease but highlights the need for accurate and complete data to support clinical correlations. As shown in table 4.

Table 4 – Laboratory Characteristics

Variable	Frequency (n)	Percentage (%)
Hemoglobin level	**11.24-1.74**	
White blood cells	**3266.48-5112.56**	
Serum calcium	**9.33-1.42**	
Estimated sedimentation rate	**23.85-6.15**	
C-Reactive protein	**14.81-8.4**	
Rheumatoid factor	**Negative**	
HLA	**Negative**	

Imaging results provide critical diagnostic insights, particularly in the absence of clear laboratory abnormalities. X-ray imaging revealed fractures in 24.2% of cases and osteoarthritic (OA) changes in 10.1%, hip dislocation in 3.03%, while no avulsion injuries or stress fractures were detected, suggesting that traumatic and degenerative pathologies predominate. Ultrasound was less diagnostically fruitful, with 78.8% showing no abnormalities; however, hernias and several other findings such as abscesses, and lipomas were each observed in a small number of patients (~3%). Computed tomography (CT) was performed in over half the cohort (55.56%), reflecting its utility in delineating complex bony or soft tissue abnormalities. Magnetic resonance imaging (MRI) identified avascular necrosis (AVN) and disc prolapse equally (each 11.11%), alongside rarer findings such as metastasis, muscle strain, and stones. These imaging results emphasize the heterogeneity of underlying etiologies, ranging from degenerative to neoplastic and traumatic conditions, necessitating a multimodal imaging approach for comprehensive diagnosis. As shown in table 5.

Table 5 – Imaging findings

Variable		Frequency (No.99)	Percentage (%)
X-Ray findings	Avulsion injury	0	0.0%
	Stress fractures	0	0.0%
	OA changes	10	10.1%
	Fractures	24	24.2%
	Hip dislocation	3	3.03%
	Not done	65	65.65%
Ultrasound	Hernia	7	7.07%
	Hip abscess	3	3.03%
	Undescended testis	3	3.03%
	lipoma	3	3.03%
	Not done	80	80.8%
CT scan	Yes	55	55.56%
	No	44	44.44%
MRI	AVN	11	11.11%
	Disc prolapse	11	11.11%
	Fracture	3	3.03%
	Metastasis	3	3.03%
	Muscle strain	3	3.03%
	Stone	3	3.03%
	Not done	65	65.65%

The provisional diagnoses underscore the predominance of musculoskeletal and structural etiologies. Fractures were the most frequent diagnosis (26.26%) including stress fractures which was diagnosed in 5 (5.05%) of those, aligning with both clinical severity and imaging findings. Avascular necrosis (15.15%) and disc prolapse (14.14%) also emerged as common diagnoses, reflecting the importance of advanced imaging in identifying non-obvious yet significant pathologies. Hernias (10.1%) and osteoarthritic changes (10.1%) represented substantial non-traumatic causes of pain, while muscle strain accounted for 7.07%. Less frequent diagnoses included abscesses, hip dislocations, lipomas, mesenteric adenitis, metastasis, and stones, each constituting around 2–5% of the cohort. This diagnostic distribution highlights a diverse spectrum of underlying conditions, with a notable emphasis on both acute injuries and chronic degenerative or systemic disorders. The findings emphasize the necessity of a thorough diagnostic process integrating clinical, imaging, and laboratory data for accurate case differentiation. As shown in table 6.

Table 6 – Provisional Diagnosis findings

Variable	Frequency (No. 99)	Percentage (%)
Fractures	26	26.26%
AVN	15	15.15%
Disc prolapse	14	14.14%
Hernia	10	10.1%
OA changes	10	10.1%
Muscle strain	7	7.07%
Hip dislocation	5	5.05%
Lipoma	3	3.03%
Mesenteric Adenitis	3	3.03%
Abscess	2	2.02%
Metastasis	2	2.02%
Stone	2	2.02%

4. DISCUSSION

Groin pain is a diagnostically challenging condition due to the anatomical complexity of the pubic, inguinal, and proximal thigh regions, where multiple systems converge. The wide differential includes musculoskeletal, neurologic, and visceral etiologies, and symptoms often overlap between conditions, complicating clinical decision-making (Imaging of groin pain). Groin pain is especially prevalent in athletes but also affects non-athletic populations, and up to 30% of cases may remain undiagnosed without advanced imaging or multidisciplinary input.[7] This study presents clinical and diagnostic findings from a real-world outpatient cohort, helping to clarify the distribution and characteristics of groin pain in a general hospital setting. The demographic findings of this study revealed a nearly equal gender distribution (54.5% female, 45.5% male) with a mean age of 39.14 years, encompassing a broad age range and diverse occupational backgrounds—primarily employees (33.3%) and housewives (24.2%). This contrasts with previous literature predominantly focused on male athletes; for example, Bisciotti et al. (2021) reported that 91% of groin pain cases in a cohort of 320 athletes were male and primarily sport-related[8], while Taylor et al. (2017) found a similar male dominance in their athletic groin pain population.[9] In contrast, the broader gender and occupational representation in this study reflects the burden of groin pain in the general outpatient population. Additionally, the relatively high prevalence of trauma (36.4%) and chronic back pain (41.4%) suggests a mechanical or spinal contribution in many cases. The notable steroid use in 23.2% of patients may also be clinically relevant, given its established link to avascular necrosis and musculoskeletal fragility.[10] reinforcing the multifactorial nature of groin pain presentations in this setting. Notably, these findings help identify population patterns, comorbidities, and lifestyle factors that may predispose patients to specific causes of groin pain, guiding targeted diagnostic evaluation and preventive strategies.

In this study, the majority of patients presented with unilateral groin pain (78.8%), more frequently on the right side (48.5%), with moderate to severe intensity (66.6%) and pain radiating to the thigh in over 43% of cases. These findings are consistent with previous research showing that groin pain often presents as unilateral and insidious, making early diagnosis difficult.[11] Pain localization can be misleading, especially when radiation occurs to adjacent regions like the thigh or lower abdomen, further complicating clinical interpretation.[12] The right-sided predominance observed

may reflect biomechanical asymmetry or dominant leg overuse, as also suggested in soccerbased studies.[13] Furthermore, the nonspecific nature of groin symptoms— especially in the absence of palpable swelling or clear trauma—has been widely reported as a barrier to accurate diagnosis in both sports and general outpatient settings.[14] Meanwhile, these findings provide detailed symptom profiles and pain patterns, enabling clinicians to narrow the differential diagnosis and select the most appropriate initial investigations.

In this study, the most frequently observed physical findings included C sign (71.7%) and limbing (48.5%), followed by catching (29.3%) and locking (7.1%), suggesting a significant musculoskeletal contribution to groin pain. These results are consistent with several previous studies. For example, Willem et al. (2024) emphasized the diagnostic value of the adductor squeeze test and the importance of localizing tenderness to the hip and abdominal regions when evaluating groin pain, particularly in active individuals.[15] Similarly, Maloy and Merrigan (2025) recommend a systematic physical exam approach to guide further imaging and diagnosis.[12] LeBlanc (2003) also stressed that careful physical examination— particularly of the groin, hip, and lower abdominal wall—is critical due to the often-overlapping nature of soft-tissue injuries, such as strains, sports hernia, and osteitis pubis.[16] These findings highlight key physical signs, such as the "C sign" and limping, that can direct suspicion toward intra-articular or mechanical hip pathology, facilitating focused diagnostic imaging.

In the present study, patients with groin pain demonstrated mild anemia (mean hemoglobin 11.2 g/dL), leukopenia (mean WBC ~3,266/µL), normal serum calcium, and elevated inflammatory markers (ESR 23.8 mm/hr, CRP 14.8 mg/L), with all testing negative for rheumatoid factor and HLA markers. The combination of elevated ESR and CRP with negative immunologic markers is consistent with patterns reported in polymyalgia rheumatica, where elevated inflammatory markers and mild anemia occur in the majority of cases, while RF and HLA-B27 are typically negative.[17] Our findings diverge from those typically observed in pelvic osteomyelitis, where ESR and CRP are usually elevated, and WBC may vary—being normal in chronic cases or leukocytosis in acute phases—highlighting their nonspecific nature in diagnosis. In contrast, our cohort showed leukopenia alongside elevated ESR and CRP. Similarly, while septic arthritis is characterized by high sensitivity (> 90%) of ESR and CRP for diagnosis of large-joint infections such as the hip and knee.[18] Our laboratory findings diverge significantly from the typical profile seen in pelvic osteomyelitis. In a 2019 retrospective review, most patients exhibited normal WBC counts even when ESR and CRP were elevated—particularly in chronic cases—highlighting the nonspecific nature of leukocyte trends in this condition.[19] In contrast, our cohort demonstrated leukopenia alongside elevated inflammatory markers, distancing the presentation from classic osteomyelitis. Similarly, septic arthritis is generally characterized by high diagnostic sensitivity of ESR and CRP—often exceeding 90% for infections involving large joints such as the hip and knee.[19] Furthermore, a 2023 study emphasized that relying solely on the synovial fluid WBC cutoff of 50,000/mm³ could result in misdiagnosis, as confirmed cases can still present with lower synovial and blood cell counts.[20] Taken together, the low peripheral WBC in our patients, despite elevated ESR/CRP, makes septic arthritis less likely. The absence of hypercalcemia also helps rule out metabolic bone disorders commonly linked with groin pain, and the negative HLA status contrasts starkly with spondyloarthropathies—where HLA-B27 positivity can exceed 90%. Radiological evaluations in this study revealed that 24.2% of patients who did X-ray had fractures, while the most common pathological findings were avascular necrosis (AVN) of the femoral head (11.11%) and degenerative joint disease (DJD) (10.1%), followed by soft tissue abnormalities and lumbar spine issues. Paksoy (2015) further underscored the importance of correlating imaging with clinical presentation, noting that even advanced modalities like MRI or CT often yield overlapping findings across different pathologies such as osteitis pubis, adductor tendinopathy, or hernias.[21] The relatively high rate of AVN in this cohort may be partly explained by the notable prevalence of corticosteroid use, a well-known risk factor for femoral head necrosis. This connection has been well documented in imaging studies, where early detection of AVN via MRI is critical for preventing disease progression.[22] Notably, these findings offer visual confirmation of underlying structural abnormalities, supporting accurate differentiation between traumatic, degenerative, and neoplastic causes of groin pain. The most common provisional diagnosis in this study was fracture (26.26%), followed by avascular necrosis (AVN) of the femoral head (15.15%) and lumbar disc prolapse (14.14%). These findings highlight the predominance of musculoskeletal and spinal causes of groin pain in outpatient settings. The high rate of fractures aligns with trauma history in over one-third of the cohort and is consistent with findings from Rubin (2014), who emphasized that acute bony injuries are frequently underrecognized in groin pain unless specifically investigated with radiography or CT.[23] AVN was also notable and may be linked to the significant corticosteroid use (23.2%) observed in this population, echoing conclusions from Bourji et al. (2021), who recommended MRI for early detection in at-risk patients.[22] Disc prolapse, responsible for nearly 1 in 7 diagnoses, supports literature showing that lumbar pathology is a common yet often overlooked cause of referred groin pain.[7] Non-orthopedic causes such as hernias (10.1%), lipomas, and metastases were also identified, underlining the importance of a multidisciplinary and imaging-supported approach to differential diagnosis, especially in populations with

varied comorbidities and non-specific presentations.[24] Metastasis accounted for only 2.02% of provisional diagnoses in our cohort, yet recent reports show it can present subtly with groin involvement. Cases include non-small cell lung cancer metastasizing to skeletal muscle or mimicking necrotizing fasciitis[25,26] and gynecologic cancers presenting as isolated inguinal node metastases.[27,28] This study has several limitations: First of all, it was conducted at a single tertiary care center, which may limit the generalizability of the findings to other regions, healthcare settings, or populations with different sociodemographic profiles. The second limitation it was cross-sectional design restricts the ability to assess temporal relationships, causality, or changes in clinical outcomes over time. The third while multiple specialties were involved, the exclusion of certain conditions such as gynecological or primary urological causes, may have led to underrepresentation of some etiologies. The fourth limitation was, not all patients underwent advanced imaging modalities (e.g., MRI or CT), which could have reduced diagnostic precision in specific subgroups and introduced potential diagnostic bias. The reliance on provisional diagnoses without long-term follow-up may have impacted the accuracy of final etiological classification.

5. CONCLUSIONS AND RECOMMENDATIONS

This study highlights the following points

1. Groin pain in the outpatient setting is complex and often caused by multiple factors.
2. Musculoskeletal conditions—especially fractures, avascular necrosis, and disc prolapse—are the most common diagnoses.
3. Structured clinical assessments combined with targeted imaging are critical for identifying the underlying pathology.
4. A multidisciplinary approach is necessary due to the wide range of potential causes.
5. The study offers valuable insights into groin pain beyond athletic populations, highlighting the broader clinical and epidemiological spectrum.
6. Tailored diagnostic strategies are needed in routine clinical practice to improve outcomes.

The study recommends the following

1. Clinicians should adopt a systematic and multidisciplinary approach when evaluating patients with groin pain to ensure accurate diagnosis.
2. Early use of appropriate imaging, particularly MRI, is advised in patients with unclear or persistent symptoms.
3. Greater awareness of non-athletic and non-traumatic causes of groin pain is needed in outpatient settings.
4. Further multicenter studies with long-term follow-up are recommended to validate diagnoses and assess treatment outcomes in orthopedic outpatients.

Conflict of intertest

The authors of this study report no conflicts of interest.

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