Journal of Neonatal Surgery
ISSN(Online): 2226-0439
Vol. 14, Issue 12s (2025)
https://www.jneonatalsurg.com

OPEN ACCESS

Comparison Of Modified Lequesne's False Profile View with Routine Hip Ap to Rule Out Dynamic Hip Instability

Tharun Kumar R[1]*, Surendhar A[2], Jayaiswarya AP[3], Vayshak K V[4], Prasanna D[5], Nisha R[6]

[1,2,3,4]Assistant Professor, Faculty of Allied Health Science, DR MGR Educational and Research Institute, ACS Medical College, Chennai, Tamil Nadu

[5,6]Intern, Faculty of Allied Health Science, DR MGR Educational and Research Institute, ACS Medical College, Chennai, Tamil Nadu

Email ID: [1]tharunkumar.rist@drmgrdu.ac.in, [2]surendhar.rist@drmgrdu.ac.in , [3]jayaishwarya.rist@drmgrdu.ac.in
[4]vayshak.rist@drmgrdu.ac.in, [5]prasannaradrit@gmail.com, [6]nishartrit2020i@gmail.com

Orcid ID: 0009-0002-5602-0740

Cite this paper as: Tharun Kumar R, Surendhar A, Jayaiswarya AP, Vayshak K V, Prasanna D, Nisha R, (2025) Comparison Of Modified Lequesne's False Profile View with Routine Hip Ap to Rule Out Dynamic Hip Instability. *Journal of Neonatal Surgery*, 14 (12s), 747-755

ABSTRACT

Background: Developmental Dysplasia of the Hip is a disorder of abnormal development resulting in dysplasia, subluxation, and possible dislocation of the hip secondary to capsular laxity and mechanical instability. The purpose of this study is to assess dynamic antero-posterior hip instability in patients with developmental dysplasia of the hip (DDH) using a lateral radiograph. The purpose of utilizing this procedure is to rule out hip instability and screen for anterior acetabular coverage, both of which are critical for accurate diagnosis and therapy.

Method: The radiographic study was done at the Department of Radio-Diagnosis in a private medical college and hospital in Chennai, Tamil Nadu.A sample of 50 patients was included. The inclusion criteria were patients with hip instability, including prolonged hip pain, and the exclusion criteria were RTA patients, postoperative evaluation, and pregnant women. All the patients in this study underwent an X-ray examination.

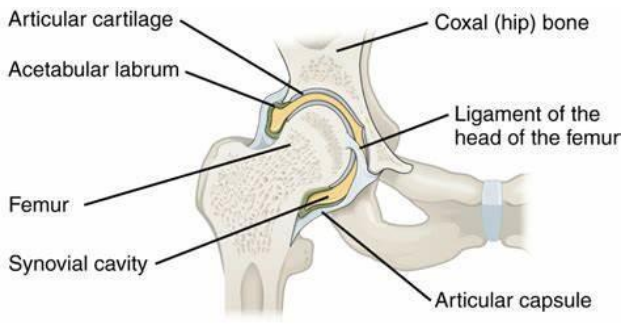
Result: Among 50 patients, we measured their W-LCEA and W-ACEA on the AP and FP view radiographs. It clearly shows that over 10 out of 30 individuals with DDH could be missed when only performing an AP pelvic radiograph. Moreover, we found a moderate correlation between the W-LCEA and W-ACEA, suggesting that hips with apparently normal acetabular coverage on the AP view can still exhibit DDH on the FP view.

Conclusion: The study confirms that Lequesne's false-profile can detect anteroposterior hip instability in DDH patients, potentially aiding diagnosis, treatment evaluation, and cost-effectiveness.

Keywords: *Pelvis, Radiography, False profile view, Hip instability, Dysplasia.*

1. BACKGROUND

FRONTAL SECTION THROUGH RIGHT HIP JOINT



Hip dysplasia is characterized by an aberrant morphology of the acetabulum and femoral head, which results in hip instability. Hip instability usually occurs when the hip joint becomes unstable and manifests as pain, laxity, discomfort, and probable

dislocation. Moreover, individuals with hip dysplasia are more likely to develop osteoarthritis (OA) due to increased contact pressure in the socket of the hip joint[1,3]. Accurate assessment of hip instability is critical for the diagnosis and effective treatment of developmental dysplasia of the hip (DDH). In order to complete the diagnosis of DDH, clinicians typically rely on anteroposterior (AP) pelvic radiograph. The most commonly used parameter for assessing acetabular coverage on an AP pelvic radiograph is the Wiberg-Lateral Center-Edge Angle (W-LCEA). However, the W-LCEA predominantly measures lateral acetabular coverage, which may result in an underestimation of DDH prevalence and lead to delayed diagnosis. The dynamic assessment of hip instability is still in its infancy[8]. Subtle DDH such as borderline hip dysplasia, which is characterized by a lateral center-edge angle (LCEA) of 20 and 25 degrees, poses a challenge in distinguishing significant instability or impingement, both of which can progress to osteoarthritis (OA)[7]. In order to solve this, the modified Lequesne's false-profile (FP) view provides an additional lateral view to assess the anterior acetabular coverage of the femoral head, which is undetectable on the frontal view. This coverage can be measured using the Wiberg-Anterior Center-Edge Angle (W-ACEA). Radiographs taken in a standing position accurately depict the weight- bearing state ofthe hip joint. So, one of the most intuitive ways to access the anterior coverage of the hip joint and view the supporting portion of the acetabulum is with a standing false profile(FP) radiograph. In our study, Lequesne's false profile view (FPV) was obtained at a modification to the hip of interest at 90° flexion in order to induce hip instability. Given that DDH can affect both the lateral and anterior aspects[2], the modified FP view radiograph provides useful additional information by assessing anterior acetabular coverage through the W-ACEA.This study intends to investigate and assess the efficacy of conventional AP pelvic radiographs with dynamic assessment approaches such as modified Lequesne's FP view to enhance the accuracy of DDH diagnosis and improve patient outcomes. The objective of this study was to measure anterior acetabular coverage via radiography to assess hip instability. Functional false-profile view (FFPV) measurements were obtained with the patient in a standing position in the sagittal plane.

2. METHODS

This study was conducted at the department of Radiodiagnosis, A.C.S medical college and hospital, Chennai, from January 2024 to July 2024 after getting clearance from the institutional ethical community. A detailed explanation was given to all patients prior to the examination. 50 patients was included in this study. All the patients underwent an X-ray examination using Allengers 325R-SR[Fig.3] with an SID of 100 cm and tube centering is the midpoint between the anterior superior iliac spine and pubic symphysis. Each patient was placed in a standing or supine position and a standard pelvis AP was taken for the x-ray film in the axial plane. Then the foot of interest was put on a step of an appropriate height, and then x-rays were taken when the hip was at 90 degree flexion to induce hip instability.The clinical parameters were measured and assessed on the AP and modified Lequesne's false profile view pelvis radiographs digitally after post-processing[4].

STATISTICAL ANALYSIS:

The p-value > 0.05 that we observed points to statistical insignificance, which is probably caused by the small sample size in our investigation. Further research with larger sample sizes is needed to validate these findings and explore additional factors contributing to hip instability.

Table 1: Distribution of Age

AGE GROUP	COUNT	PERCENTAGE
15-25	6	12

26-35	11	16
36-45	16	32
46-55	17	34
TOTAL	50	100

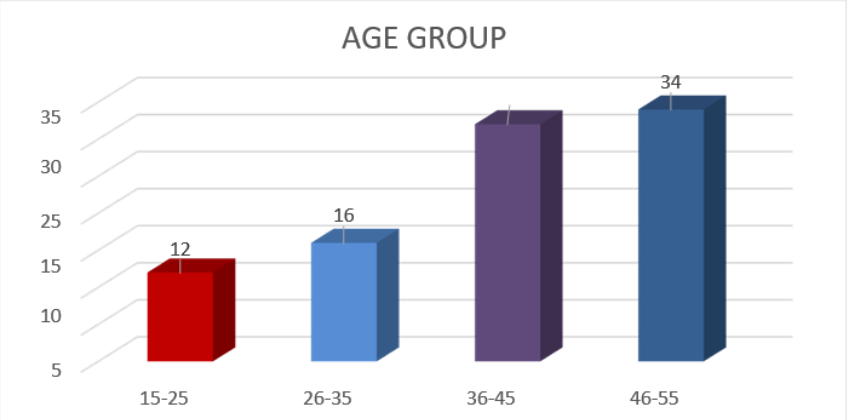


Chart 1

The chart shows the number of patients who are grouped in basis of age from the study population.

Table 2: Distribution Of Gender

GENDER	COUNT	PERCENTAGE
MALE	24	48
FEMALE	26	52
TOTAL	50	100

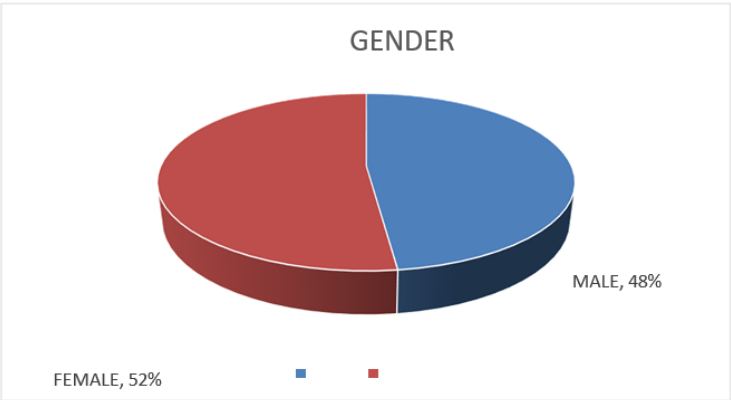


Chart 2

The pie chart shows the number of patients who are group on basis of sex from the study population

Table 3: Age Distribution of Dysplasia, Non-Dysplasia in AP Radiograph

AGE GROUP	PRESENCE OF DYSPLASIA		ABSENCE OF DYSPLASIA	
	COUNT	PERCENTAGE	COUNT	PERCENTAGE
15-25	2	4	4	8
26-35	3	6	8	16
36-45	7	14	9	18
46-55	8	16	9	18
TOTAL	20	40	30	60

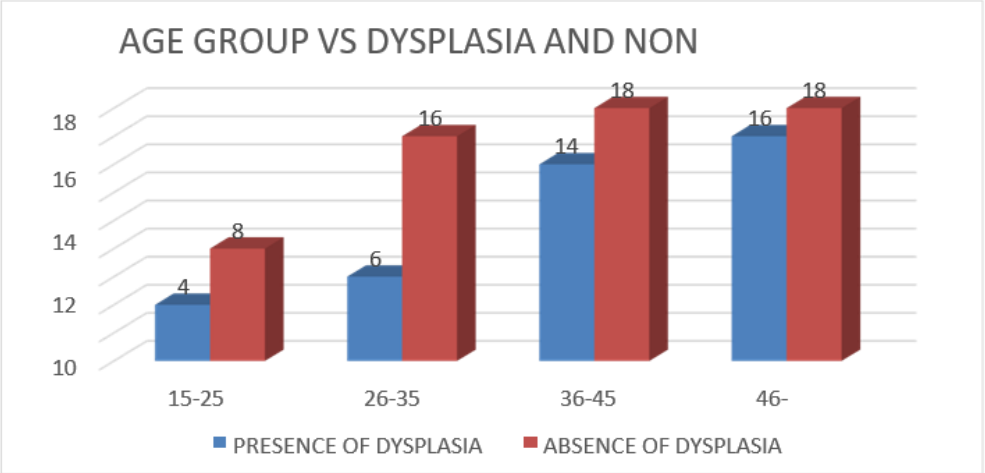


Chart 3

The above chart shows the number of dysplasia and non dysplasia patients in AP view who are grouped in the basis of age from the study population.

Table 4: Age Distribution Among Dysplasia and Non-Dysplasia Patients in Fp Radiograph

AGE GROUP	PRESENCE OF DYSPLASIA		ABSENCE OF DYSPLASIA	
	COUNT	PERCENTAGE	COUNT	PERCENTAGE
15-25	2	4	4	4
26-35	7	14	4	4
36-45	8	16	8	8
46-55	13	26	4	4
TOTAL	30	60	20	40

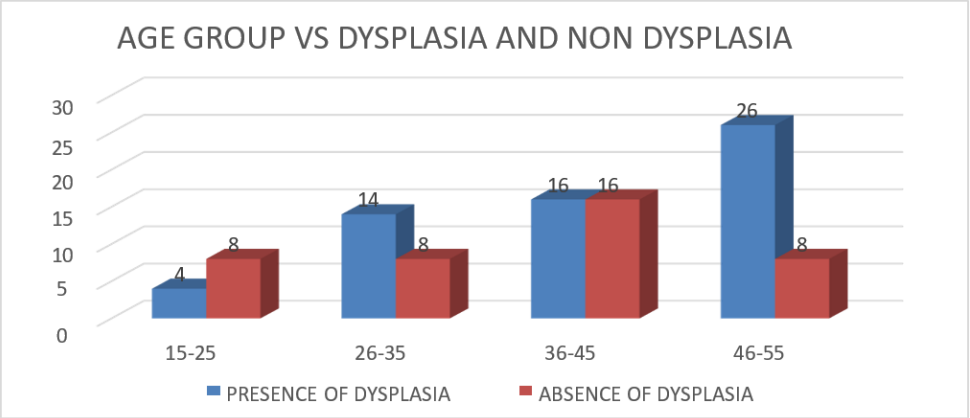


Chart 4

The above chart shows the number of dysplasia and non dysplasia patients in FP view who are grouped in the basis of age from the study population.

Table 5: Gender Distribution Among Dysplasia and Non-Dysplasia Patients in Ap Radiograph

GENDER	PRESENCE OF DYSPLASIA		ABSENCE OF DYSPLASIA	
	COUNT	PERCENTAGE	COUNT	PERCENTAGE
MALE	10	20	14	28
FEMALE	10	20	16	32
TOTAL	20	40	30	60

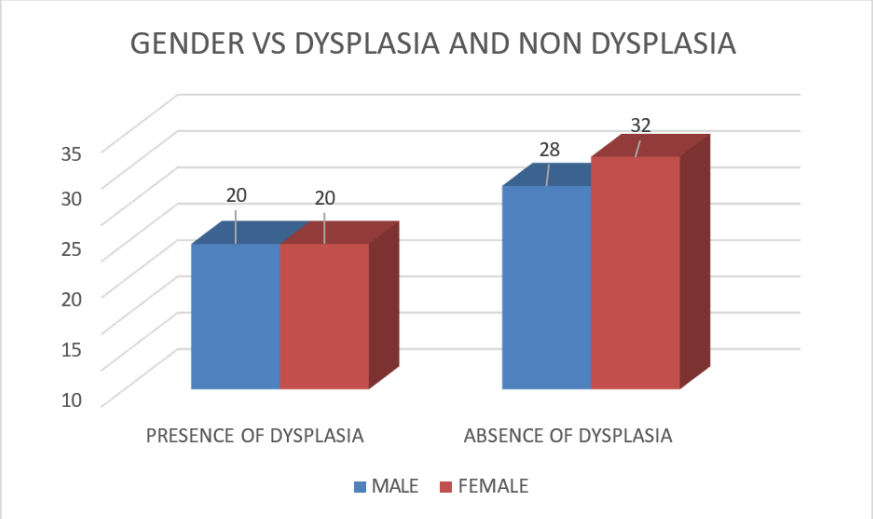


Chart 5

The above chart shows the number of dysplasia and non dysplasia patients in AP view who are grouped in the basis of sex from the study population.

Table 6: Gender Distribution Among Dysplasia and Non-Dysplasia Patients in Fp Radiograph

GENDER	PRESENCE OF DYSPLASIA		ABSENCE OF DYSPLASIA	
	COUNT	PERCENTAGE	COUNT	PERCENTAGE
MALE	15	30	9	18

FEMALE	15	30	11	22
TOTAL	30	60	20	40

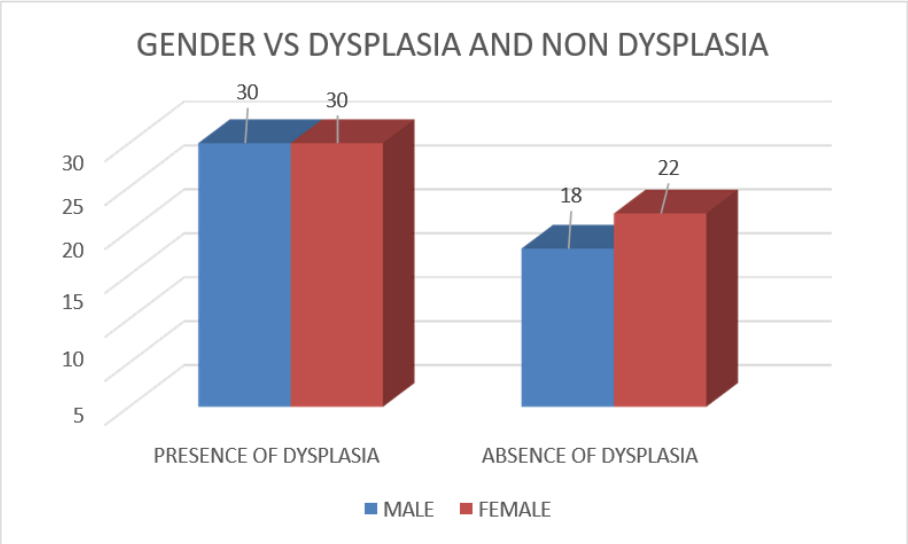


Chart 6

The above chart shows the number of dysplasia and non dysplasia patients in FP view who are grouped in the basis of sex from the study population.

Table 7: Comparative Analysis Among Dysplasia and Non-Dysplasia Patients in Both Ap And Fp Radiograph

RESULT	AP		FP	
	COUNT	PERCENTAGE	COUNT	PERCENTAGE
PRESENCE OF DYSPLASIA	20	40	30	60
ABSENCE OF DYSPLASIA	30	60	20	40
TOTAL	50	100	50	100

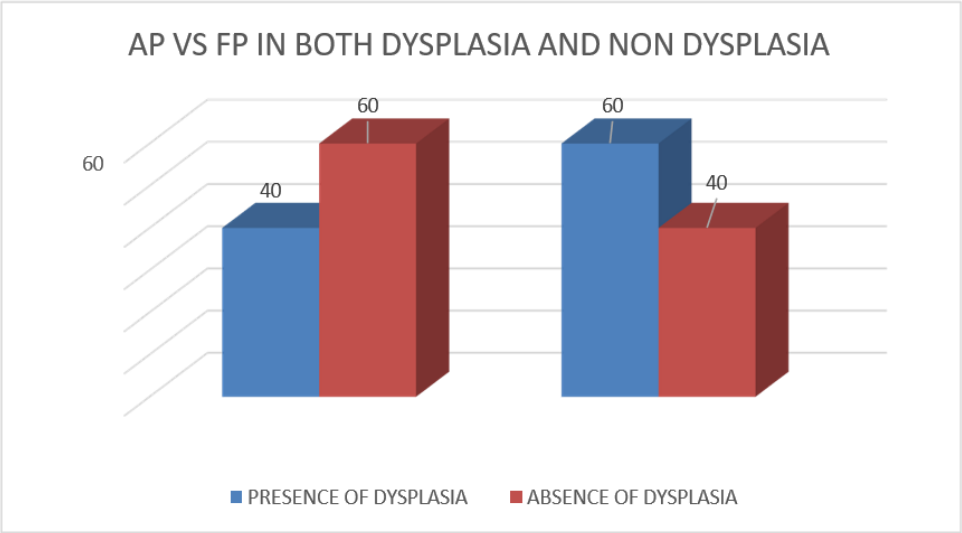
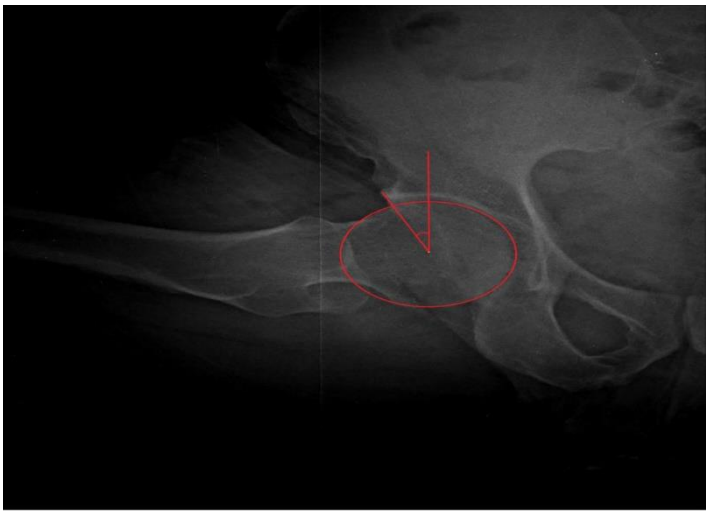


Chart 7

The above chart shows the total number of dysplasia and non dysplsia patients in both AP and FP views.

3. RESULT

In our study, which consisted of 50 patients, 24 were male and 26 were female. We identified cases of borderline dysplasia and dysplasia, with an additional observation of the absence of dysplasia in some cases. Furthermore, our analysis of age and sex distribution revealed hip issues were similarly distributed among male and female patients (50%). Notably, individuals between the ages of 45 and 55 were most affected. Our results show that over 10 out of 30 individuals with DDH could be missed when only performing an AP pelvic radiograph. Moreover, we found a moderate correlation between the Wiberg-LCEA (W-LCEA) and Wiberg-ACEA (W-ACEA), suggesting that hips with apparently normal acetabular coverage on the AP view can still exhibit DDH on the false profile (FP) view.



WIBERG ANTERIOR CENTRE EDGE ANGLE

WIBERG LATERAL CENTRE EDGE ANGLE

4. DISCUSSION

This study was conducted by us in the department of radiology in A.C.S. medical college and hospital after obtaining the Institutional Ethics Committee's approval. Our study is a cross-sectional study involving 50 patients utilizing the Allengers 325 R-SR machine, we investigated the prevalence of hip instability, emphasizing the importance of radiological assessment, particularly through plain radiographs. A substantial proportion of the people in the general population are thought to have hip instability. We agreed that radiological assessment is best achieved initially with a plain radiograph. But when only using the AP (W-LCEA), a significant number of hips with DDH will be missed. So, it is recommended to take FP radiographs routinely for determining anterior hip coverage, and this modified FP view radiograph holds promise as a complementary tool in assessing hip instability.

5. CONCLUSION

The aim of the study is to rule out hip instability and screening of anterior acetabular coverage in patients by lateral view from a radiograph. So, in conclusion, there is a strong additional value to a modified FP-view radiograph in diagnosing hip instability. An AP pelvis and a hip FP view should be included in the diagnostic workup for suspected DDH. This new method of assessing hip instability may be most effective in diagnosing the etiology and evaluating the treatment for developmental dysplasia of the hip at a lower cost and with improved accessibility. It is reasonable to anticipate an additional value for the modified false profile view radiograph.

REFERENCES

[1] Klaue, K., Durnin, C. W., & Ganz, R. (1991). The acetabular rim syndrome: A clinical presentation of dysplasia of the hip. Journal of Bone and Joint Surgery. British volume, 73(3), 423-429 https://doi.org/10.1302/0301-620X.73B3.1670443

[2] Nova Ortho and Spine. (n.d.). Hip Instability. Nova Ortho and Spine. Retrieved May 29, 2024, from https://www.novaorthospine.com/specialties/hip/hip_instability

[3] Clohisy, J.C., Carlisle, J.C., Beaulé, P.E., Kim, Y.J., Trousdale, R.T., Sierra, R.J., & Schoenecker, P.L. (2016). Hip Dysplasia in the Young Adult. Journal of Bone and Joint Surgery, 98(1), 63-73. https://doi.org/10.2106/JBJS.O.00109

[4] Beltran, L. S., Rosenberg, Z. S., Mayo, J. D., De Tuesta, M. D., Martin, O., Neto, L. P., & Bencardino, J. T. (Year). Imaging Evaluation of Developmental Hip Dysplasia in the Young Adult. American Journal of Roentgenology, 200(5) https://doi.org/10.2214/AJR.12.9360

[5] Wiberg G. Studies on dysplastic acetabulum and congenital subluxation of the hip joint with special reference to the complications of osteoarthritis. Acta Chir Scand 1939; 83: 135.10.4236/ojo.2016.68032

[6] Fredensborg N. (1976). The CE angle of normal hips. Acta orthopaedica Scandinavica, 47(4), 403–405. https://doi.org/10.3109/17453677608988709.

[7] McClincy, M. P., Wylie, J. D., & Novais, E. N. (Year). Mild or Borderline Hip Dysplasia: Are We Characterizing Hips with a Lateral Center-Edge Angle Between 18° and 25° Appropriately? sage journals, Volume 1, issue 1 https://doi.org/10.1177/0363546518810731

[8] Kato, Y., Shoji, T., Inoue, T., Fujiwara, Y., Sumii, J., Mori, R., & Adachi, N. (2023). Evaluation of antero-posterior instability of the hip using modified Lequesne's false profile view. Journal of orthopaedic science: official journal of the Japanese Orthopaedic Association, 28(3), 583–588. https://doi.org/10.1016/j.jos.2022.01.008

[9] Herfkens, J., van Buuren, M. M. A., Riedstra, N. S., Verhaar, J. A. N., Mascarenhas, V. V., & Agricola, R. (2022). Adding false-profile radiographs improves detection of developmental dysplasia of the hip, data from the CHECK cohort. Journal of hip preservation surgery, 9(1), 3–9 https://doi.org/10.1093/jhps/hnac008

[10] Cheng, H., Zhang, Z., Sun, W., Ren, N., Luo, D., Li, Y., Zhang, J., & Zhang, H. (2023). Can we determine anterior hip coverage from pelvic anteroposterior radiographs? A study of patients with hip dysplasia. BMC musculoskeletal disorders, 24(1), 522. https://doi.org/10.1186/s12891-023-06624-2

[11] Lequesne, M. G., & Laredo, J. D. (1998). The faux profile (oblique view) of the hip in the standing position. Contribution to the evaluation of osteoarthritis of the adult hip. Annals of the rheumatic diseases, 57(11), 676–681. https://doi.org/10.1136/ard.57.11.676

[12] Kruithoff, M. L., & McGrory, B. J. (2021). The Value of the Direct Lateral Hip Radiograph in an Adult Reconstruction Practice. Arthroplasty today, 8, 29–34. https://doi.org/10.1016/j.artd.2020.12.020

[13] Clinical Evaluation of the Hip with Focus on Assessment of Hip Instability Elizabeth H. G. Turner, MD, Lauren E. Watchmaker, BA, and Andrea M. Spiker, MD https://orcid.org/0000-0003-1243-9726

[14] Murphy, M. M., Atkins, P. R., Kobayashi, E. F., Anderson, A. E., Maak, T. G., Nechyporenko, A. V., & Aoki, S. K. (2019). Assessment of Acetabular Morphology Using the Acetabular Anterior Center-Edge Angle on Modified False-Profile Radiographs. Arthroscopy: the journal of arthroscopic & related surgery: official publication of the Arthroscopy Association of North America and the International Arthroscopy Association, 35(11), 3060–3066. https://doi.org/10.1016/j.arthro.2019.05.048

[15] Conrozier, T., Bochu, M., Gratacos, J., Piperno, M., Mathieu, P., & Vignon, E. (1999). Evaluation of the 'Lequesne's false profile' of the hip in patients with hip osteoarthritis. Osteoarthritis and cartilage, 7(3), 295–300. https://doi.org/10.1053/joca.1998.0203 16. BD Chaurasia's Human Anatomy, Volume 2 – Lower Limb, Abdomen and Pelvis, 6th Edition https://archive.org/details/bd-chaurasias-human-anatomy-volume-2-lower-limb

[16] Applied anatomy of hip and buttock-Ludwig Ombregt https://www.orthopaedicmedicineonline.com/downloads/pdf/B9780702031458000843web.pdf

[17] Manipal Manual of Anatomy -Sampath Madhyastha, https://g.co/kgs/3cLC8T4

[18] Basic radiological physics-Kuppusamy thayalan https://g.co/kgs/fKAG2yE

[19] Christensen ‘s physics of diagnostic radiology – Thomos curry,James dowdy , Robermurry https://g.co/kgs/eMaabh3

.