

Management of Adult Hip Dysplasia

Background & Inclusion

Hip dysplasia in the young adult population is underdiagnosed by Orthopaedic practitioners¹. Delays in diagnosis and referral to units offering hip preservation surgery may result in ongoing pain, progressive arthrosis and disability; potentially missing the opportunity for joint preserving interventions. Pain and disability may be very severe and may appear to be out of proportion to the findings on imaging studies to those less familiar with the condition. Pain can develop well before the development of degenerative changes. Inclusion: Young adults, 16-50 years of age with hip dysplasia.

Diagnosis & Assessment

1. Hip dysplasia should be considered in any young adult with a history of progressive, often insidious onset, hip pain. Symptoms can start in late childhood/adolescence. Symptomatic hip dysplasia is often misdiagnosed as impingement, tendonitis/bursitis, or generalised hypermobility.
2. Symptoms can include, but are not limited to groin, lateral or posterior pain, "clunking or clicking" and instability. Clinically, patients may have a painful range of movement, hypermobility, iliopsoas dysfunction and abnormalities of rotational profile.
3. Risk factors associated with hip dysplasia include positive family history, female sex, breech presentation at birth, intrauterine packaging disorders and maternal primiparity.
4. Diagnosis is usually confirmed with plain radiographs but can often be missed by clinicians inexperienced with adult hip dysplasia. An AP Pelvic radiograph should be assessed in all cases for the lateral centre edge angle (LCEA). The LCEA is the commonest diagnostic parameter. Dysplasia is diagnosed by a LCEA under 25 degrees². The Sourcil (Tonnis) angle can also be assessed on the AP view. False profile radiographs should be considered to assess the anterior centre edge angle and anterior wall index³. Borderline dysplasia or hip instability may still be present with normal values for both LCEA and/or the Tonnis angle.
5. Cross sectional imaging (CT +/- MRI) is useful to assess 3-dimensional morphological abnormalities of the acetabulum, acetabular version and femoral version. It may also be used to assess for arthrosis and other possible generators of pain.
6. Diagnostic hip injections can be used to confirm the pain is from an intraarticular origin and response is a useful prognostic indicator.

Management

7. Patients with symptomatic hip dysplasia should be managed in a specialist centre for hip preservation surgery by a team experienced with this condition. There should be a clear referral pathway for hospitals which do not offer hip preservation surgery to tertiary/quaternary specialist centres.
8. The use of multidisciplinary team meetings to discuss complex cases should be considered as good practice.
9. Non-operative strategies include physiotherapy, exercise and analgesia. Patients with significant ongoing symptoms should be considered for a pelvic osteotomy, such as a Periacetabular osteotomy (PAO), Triple osteotomy or other acetabular redirection osteotomy. Femoral osteotomies may need to be considered for concomitant proximal femoral abnormalities.
10. Surgeons performing joint preserving procedures should have appropriate training and expertise, including fellowship experience.
11. Hip arthroscopy alone may have a role in treating borderline hip dysplasia, but not for more severe forms. This is a controversial topic and other radiographic parameters may be used to determine which patients have a high risk of failure with an arthroscopic-only approach³.
12. Patients with significant secondary arthrosis (Tonnis grade ≥ 2) or joint space narrowing on imaging should not be considered for hip preservation surgery. Patient age >50 years is associated with poor outcomes from PAO surgery and early conversion to arthroplasty⁴. Patients aged 40-50 years should be offered surgery with caution, and careful consideration given to their physiological age.
13. Patient education, weight loss and smoking cessation should be instigated prior to surgery where appropriate, with consideration of starting calcium and vitamin D supplements.
14. Concomitant femoroacetabular impingement (FAI) and labral tears can be present in patients with hip dysplasia. Patients undergoing a PAO should be warned they may require subsequent hip arthroscopic surgery if they continue to experience significant symptoms. This can be performed at the same time as routine metalware removal or as a standalone procedure.
15. Pre- and post-operative Patient Reported Outcome Measures (PROMs) should be collected for all patients undergoing hip preservation surgery and entered into the UK Non-Arthroplasty Hip Registry (NAHR).
16. Post-operative rehabilitation should follow a dedicated pathway delivered by appropriately trained staff with experience in managing patients following pelvic osteotomy.
17. Patients should be followed up in the out-patient department with periodic radiographs.

¹ Gala L, Clohisy JC, Beaulé PE. Hip Dysplasia in the Young Adult. *J Bone Joint Surg Am.* 2016;98(1):63-73.

² Beltran LS, Rosenberg ZS, Mayo JD, De Tuesta MD, Martin O, Neto LP, et al. Imaging evaluation of developmental hip dysplasia in the young adult. *AJR Am J Roentgenol.* 2013;200(5):1077-88.

³ Kraeutler MJ, Garabekyan T, Pascual-Garrido C, Mei-Dan O. Hip instability: a review of hip dysplasia and other contributing factors. *Muscles, ligaments and tendons journal.* 2016;6(3):343-53.

⁴ Sohatee MA, Ali M, Khanduja V, Malviya A. Does hip preservation surgery prevent arthroplasty? Quantifying the rate of conversion to arthroplasty following hip preservation surgery. *Journal of Hip Preservation Surgery.* 2020;7(2):168-82.