THE USE OF ISOTOPE BONE SCANS IN GUIDING THE SURGICAL MANAGEMENT OF PATIENTS WITH UNILATERAL MANDIBULAR CONDYLAR HYPERPLASIA

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INTRODUCTION

• Mandibular condylar hyperplasia is a well recognised cause of facial asymmetry and pain

• Characterised by an excessive growth of the condyle beyond an age where growth is expected to have ceased
DEMOGRAPHICS/ CLINICAL PRESENTATION

• Usually presents in 2nd and 3rd decades of life

• More commonly seen in females [1]

• Typical presenting symptoms include malocclusion, facial asymmetry or TMJ dysfunction
AETIOLOGY

• The aetiology is unclear

• Growth is likely to be caused by persistent activity in the pre-cartilaginous cell of the condyle growth zone [2]

• Hormonal influences, infection, trauma and abnormal loading have all been suggested as potential factors that may trigger abnormal growth [3]
DIAGNOSIS

• Clinical examination

• OPG, PA and lateral cephalogram

• Serial dental casts to follow changes in dental midline, dental occlusion and open bite

• Radionuclide bone scintigraphy
TREATMENT

- Treatment is primarily surgical with or without orthodontics

- While there is still active growth on the affected side, surgery is performed to limit progressive asymmetry [4]

- High condylar shave is the preferred procedure at this stage

- Osteotomy
TREATMENT

• Once there is cessation of active growth, more definitive correction by mandibular or maxillary osteotomies or both are performed

• If however osteotomy is undertaken while condylar activity persists, further deformity may develop

• Conversely if HCS is performed in a ‘burnt-out’ condyle this causes unnecessary disruption of the TMJ [4]
TREATMENT

• Hence it is critical to the treatment of these patients to establish if there is active growth in the affected condyle
ROLE OF NUCLEAR SCINTIGRAPHY

• Serial measurements from dental casts give an indication of continuing growth

• Bone scanning however allows an instant method of assessing if there is active growth in the affected condyle
ROLE OF NUCLEAR SCINTIGRAPHY

- Initially lateral planar views were used to evaluate the condyles.
- Evaluation was either semi-quantitative or quantitative with common vertebrae used as the anatomical reference point.
- With the advent of SPECT, the condyles were better localised and the clivus was used as a reference to activity [5].
ROLE OF NUCLEAR SCINTIGRAPHY

• More recently Hodder et al used the other condyle for quantitative analysis, with a relative percentage uptake of 55% or more on the affected condyle considered to be abnormal [4].

• This was validated using data from an age-matched control group
METHODS

• We reviewed 46 patients with a clinical diagnosis of condylar hyperplasia referred for bone scan in our department over a 10 year period

• We used the original reports based on either semi-quantitative or quantitative methods of analysis to assess uptake
RESULTS

• 24 scans in total reported as demonstrating unilateral, pathological condylar uptake:
• 10 patients have had HCS
• 3 are awaiting HCS
• 2 went straight to Osteotomy alone
• 4 were discharged with surgery not indicated
• 1 is awaiting review
• The remainder were lost to follow-up
RESULTS

- Of the 10 patients who had HCS:
- 2 have subsequently had osteotomy
- 4 still undergoing completion orthodontics prior to osteotomy
- 3 happy with current appearance and not keen on further surgery
- 1 has moved away from the region
RESULTS

• Of the 22 normal scans:

• 12 patients were discharged without surgery

• 9 patients have either had or are awaiting osteotomy

• 1 lost to follow-up
SURGICAL OUTCOMES

• Surgical outcomes have been audited within the Maxillofacial department during this period.

• Patients followed up from time of HCS to the age of 17-18 (male) and 16 (female) at which time they are assessed for potential osteotomy

• Post-osteotomy patients followed up for a year
Surgical Outcomes

• Of all the HCS patients there have been no signs of recurrence/on-going growth post procedure

• Post osteotomy a recurrence of the dental centreline shift of 0.5 mm or less is not regarded as significant.

• Only one of the osteotomy patients had a significant relapse of 2mm following a 7mm shift. This followed an intra-operative complication.
CONCLUSION

• Unilateral condylar hyperplasia is a painful deformity seen in the adolescent

• Isotope bone scans can be used to monitor the status of the condition

• Bone scans are essential to the clinician in guiding when to operate and which type of surgical procedure to perform.
REFERENCES


