

# Plagiocephaly-The Oblique Skull a Method of Chiropractic Correction

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# Plagiocephaly

- Plagiocephaly is the general term to describe cranial asymmetry
- Glat et al (1996) developed the most widely used classification system
- Three main types:
  - Type 1 Synostotic
  - Type 2 Deformational
  - Type 3 Craniofacial microsomnia

# Synostotic Plagiocephaly

- Premature fusion of sutures which do fuse i.e. metopic suture
- Fusion of sutures which should remain patent i.e. coronal or sagittal sutures
- Less than 1% of all plagiocephalies
- Diagnosis is important as surgical management is often necessary

# Deformational Plagiocephaly

- Skull deformation as a result of mechanical stress (intrauterine constraint, birth trauma and uniform sleeping position)
- 24% of singleton and 54% of twins some degree of skull distortion (Peitsch et al 2002)
- Differentiation from synostosis is very important

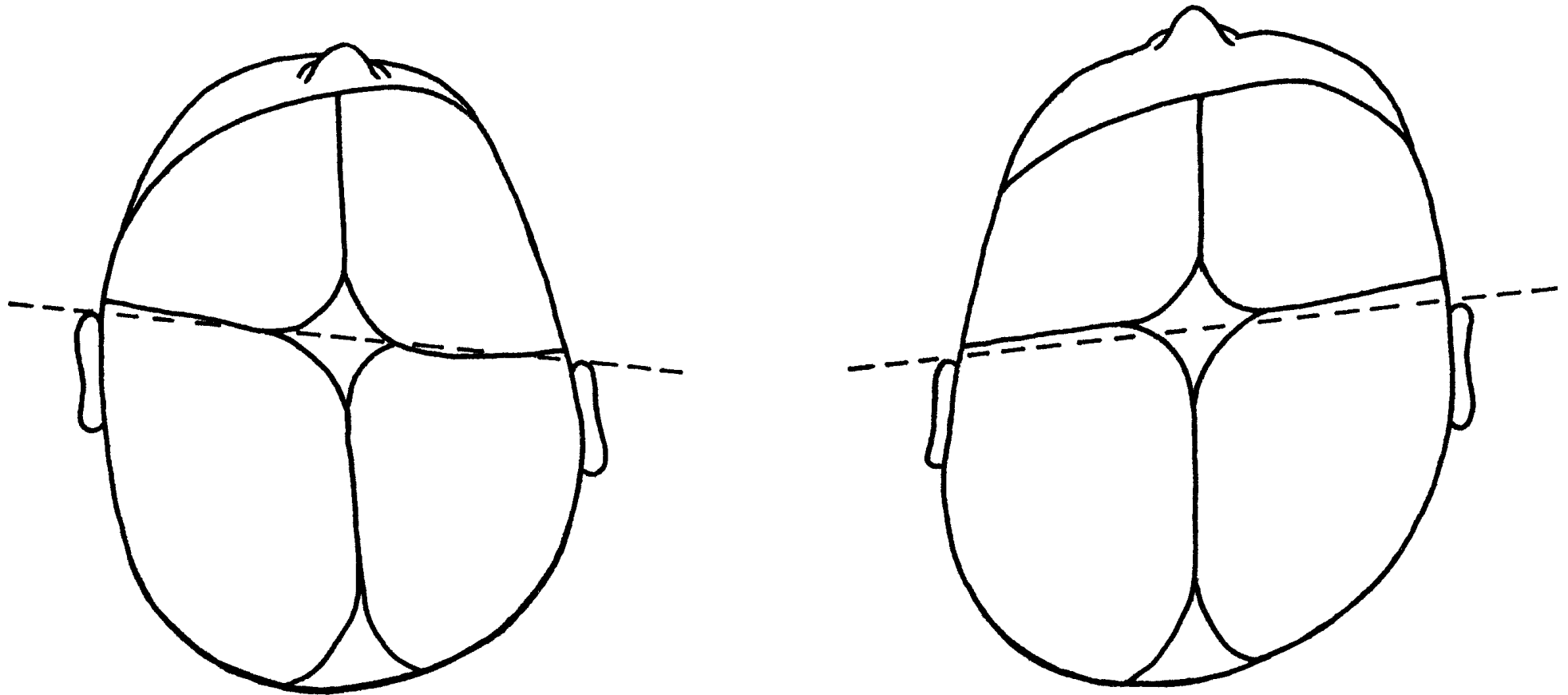
# Plagiocephaly Differential Dx

- Synostosed midline (sagittal and metopic) sutures show a thickened ridge (Huang et al 1998)
- Losee (2005) showed that using CT in synostosis there was complete sutural obliteration with ectocranial ridging
- Deformational plagiocephaly (DP) showed endocranial ridging and narrowing

# Plagiocephaly Differential Dx

- Bruneteau and Mulliken (1992) used cranial landmarks for ddx
- Viewed from the vertex in frontal plagiocephaly synostosis will show frontal flattening, anterior ear displacement and facial sparring
- DP will show frontal flattening, posterior ear displacement and face mirroring of the flattened frontal

# Unilateral Coronal Synostosis vs. Deformational Plagiocephaly

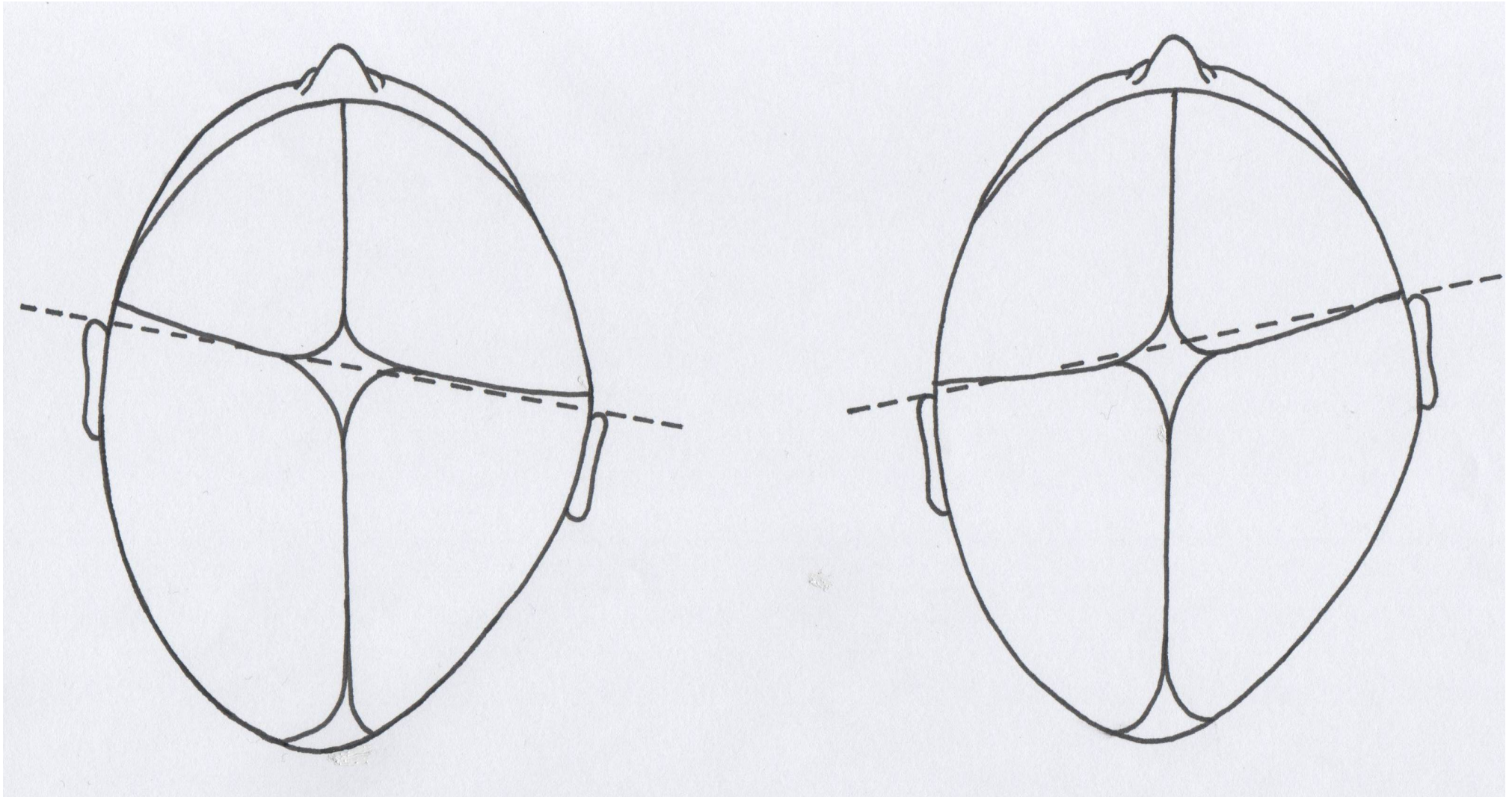


# Posterior Plagiocephaly Differential Dx

- AAP (2003) occipital flattening at birth-probable lamboidal synostosis
- Occipital flattening that began a few weeks after is probably DP
- Viewed from the vertex in synostosis ipsilateral ear to flattening is posterior
- DP the ipsilateral ear to flattening is anterior



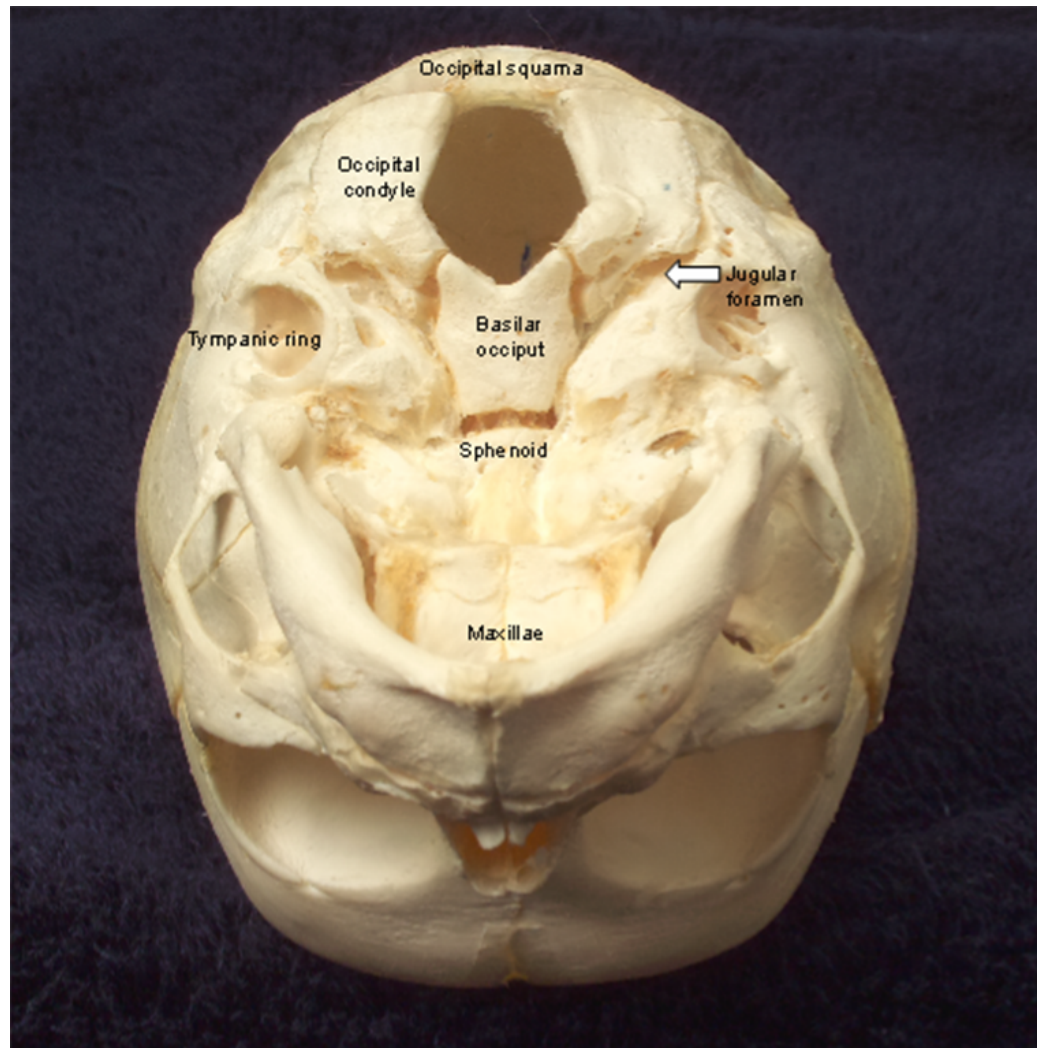
# Unilateral Lambdoidal Synostosis vs. Deformational Plagiocephaly



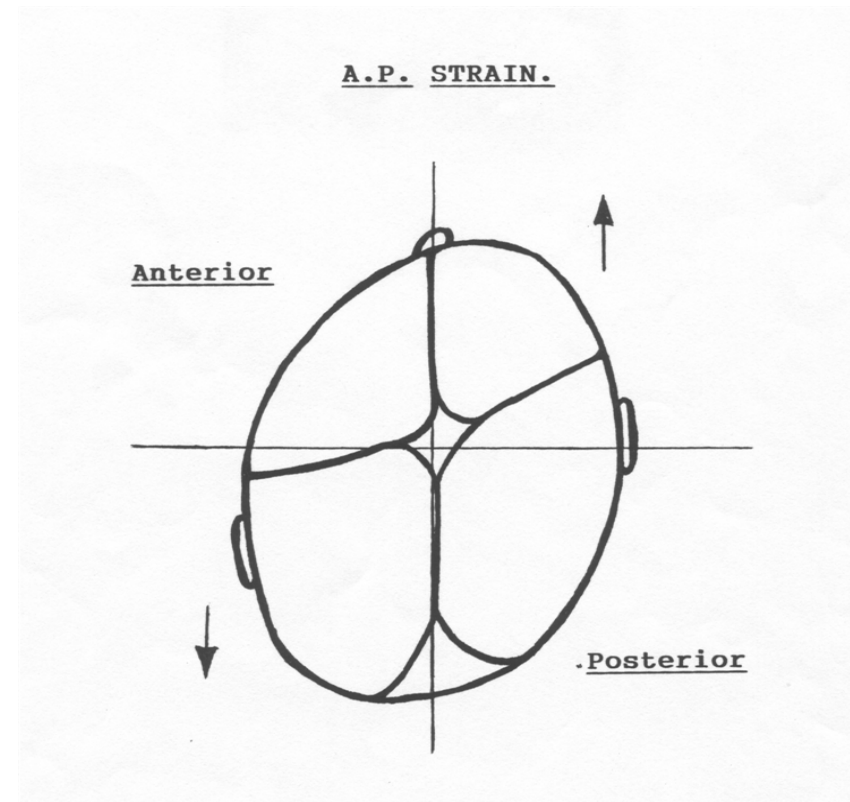
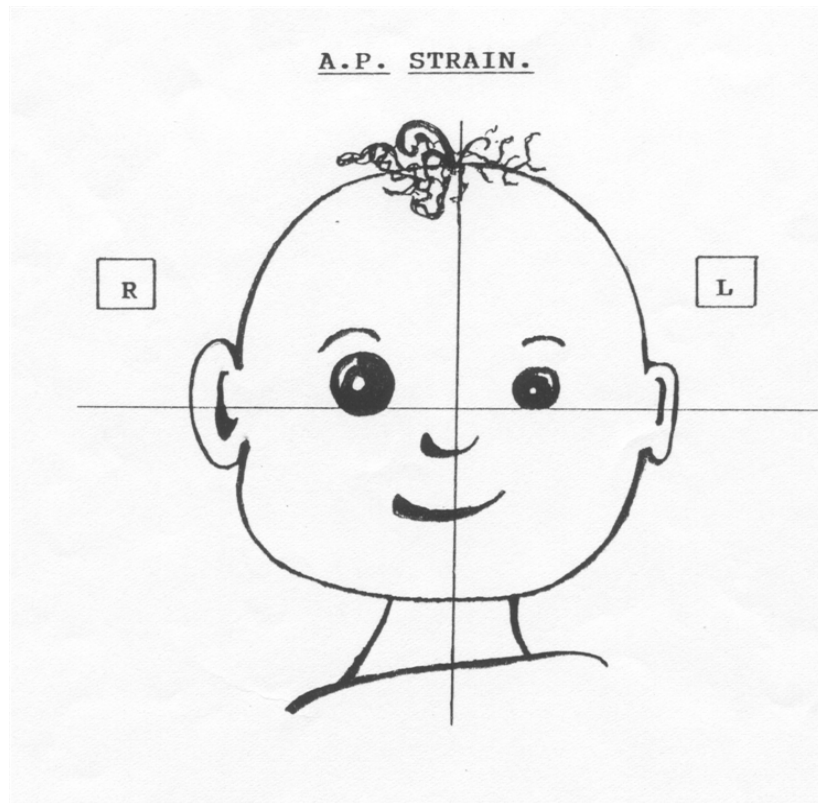
# The Anterior- Posterior (A-P) Strain

- The A-P strain (oblique or parallelogram skull) was described by little as far back as 1862
- Arbuckle (1954) theorised that it developed from distortions of the skull base originating from the occipital ring. These distortions of the skull base were then expressed via dural pull in the skull vault

# Late Foetal Skull Base



# The A-P Strain Anterior and Vertex View



# Deformational Plagiocephaly Treatment

- Conventional non surgical management of DP involves repositioning during sleep and helmet therapy (Losee et al 2007)
- Studies by Davies (2002) and Quezada (2004) have on a small scale demonstrated successful chiropractic management of DP

# Case Report

- 18 week old male child
- Right occipital flattening
- Sleeps with head in right rotation
- 3.5 hour labour delivered with cord around the neck
- History of colic and eczema

# Case Report

- Neurological examination was within normal limits (cranial nerves, DTR's, neonatal reflexes)
- Spinal subluxations found at C1-2, T7-8 and S2 on the left
- Cranial subluxations- right occipital compression, moderate left anterior-posterior strain with a mild right lateral strain (palpatory diagnosis of plagiocephalic cranial strains is described in a study by Sergueef (2006))

# Case Report Clinical Picture

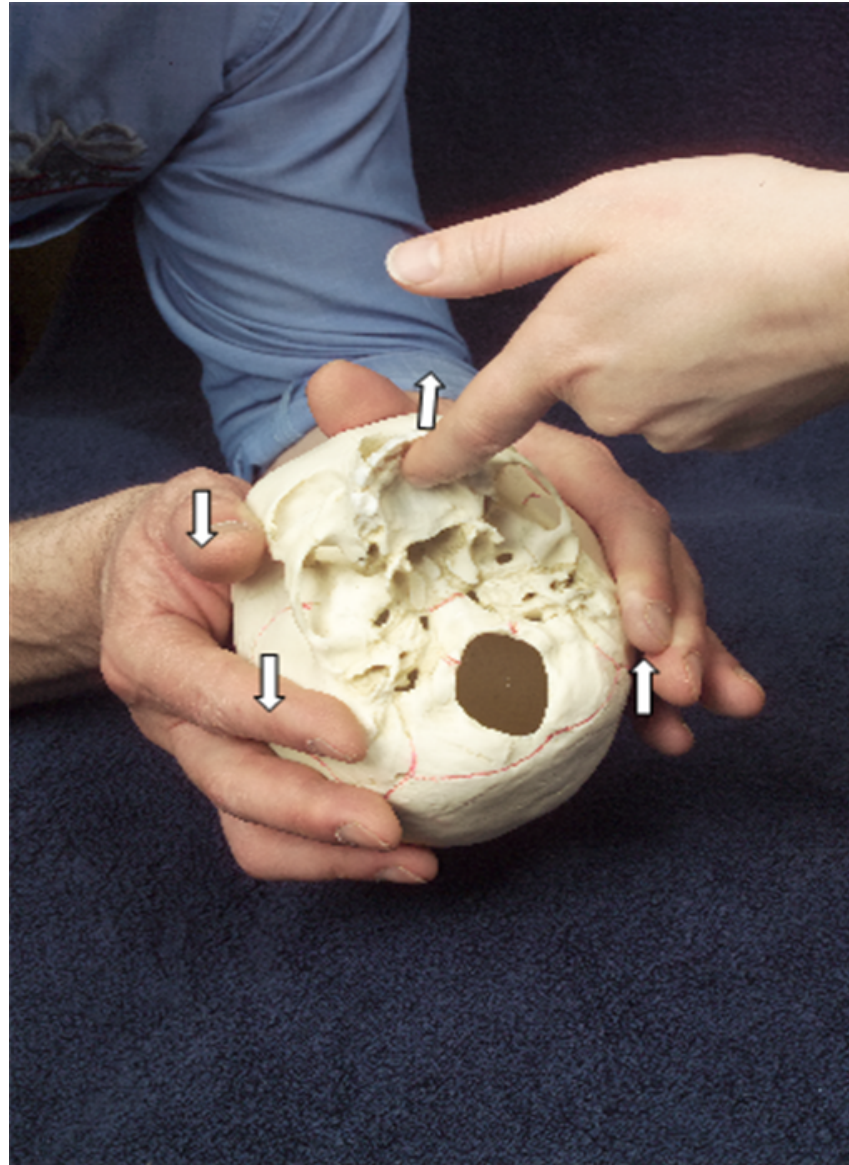
- 1 Occipital condyle compression on the right
- 2 Plagiocephaly- Anterior-Posterior strain pattern
- 3 Kinematic imbalances due to sub occipital strain (KISS) syndrome Type 1



# Intervention

- 12 treatments over a period of 3 months
- At each visit the sacrum and any spinal subluxations were checked and corrected if necessary
- A cranial specific A-P strain correction was made at each visit

# A-P Strain Correction



# Case Study pre and post Rx



# Discussion

- Plagiocephaly research suggests early intervention is beneficial
- Young skull is more malleable
- Adjustment works directly with the external contacts on the vault reducing the skull asymmetry
- The inter oral contact uses the hard palate as a lever to affect the inter cranial dural membranes by pulling on the maxilla which transfers the stress to the vomer and on to the dura

# Discussion

- It is theorised that this dural membrane correction both decreases the stresses to the skull vault from the dura and most importantly resets the relationship between the component parts of the occiput

# Future Studies

- Skilled chiropractic management of deformational plagiocephaly warrants further investigation and appears to carry little risk and may be a cheaper and less traumatic alternative to helmet therapy
- Discussions are underway for further larger studies

# References

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