



### Objectives

To increase the awareness of rare paediatric hematogenous osteomyelitis at the metaphyseal equivalent at the pelvis and to illustrate the role of imaging in its diagnosis and guiding subsequent management.

### Materials and methods

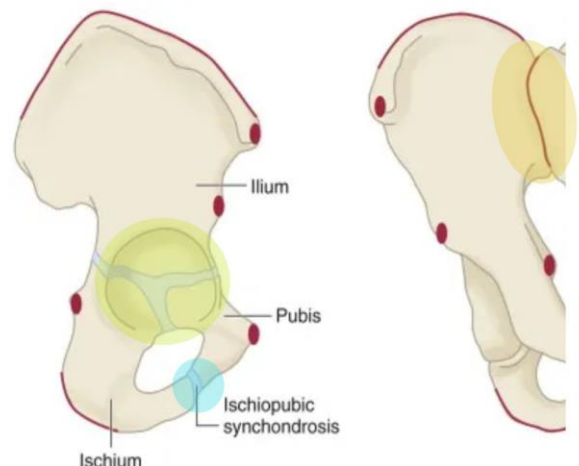
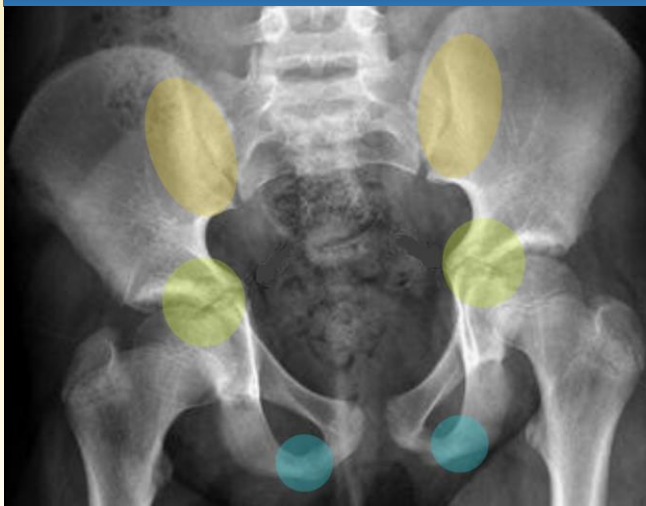
A case report of clinical presentation and imaging findings of a paediatric patient presented with osteomyelitis and Brodie abscess at the right inferior pubic ramus and ischium with abscess formation at the right obturator internus and externus muscles and pelvic cellulitis who subsequently recover after surgical drainage by pediatric orthopedic team and course of antibiotics.

### Results

Acute hematogenous osteomyelitis is a common in paediatric population due to less developed immune system. Metaphyseal regions of long bones in children are physiologically rich in blood supply with sluggish flow to allow nutrients to diffuse to the adjacent metabolically active physis. However, this also promotes the chance for bacteria in bloodstream to lodge and proliferate at metaphysis.

Metaphysis of long bone is a well-known site for hematogenous osteomyelitis in children, however, metaphyseal-equivalent involvement is less common ( accounts for 1-11% of all pediatric hematogenous osteomyelitis ) and is easily forgotten entity. Metaphyseal equivalents are the regions of flat and irregular bones adjacent to cartilage ( e.g. bones bordering apophysis growth plates ), which are also susceptible to hematogenous osteomyelitis due to similar physiology as long bone metaphysis. For pelvis, metaphyseal-equivalent areas are near sacroiliac joint ( Yellow area in Fig 1. ), triradiate cartilage ( Green area in Fig. 1 ) and ischiopubic synchondrosis ( Blue area in Fig. 1 ). Clinical diagnosis of metaphyseal equivalent is often challenging and delayed until there is soft tissue cellulitis and abscess formation, especially when involving deep seated pelvis.

**Fig. 1 : Locations of metaphyseal equivalent in paediatric pelvis**

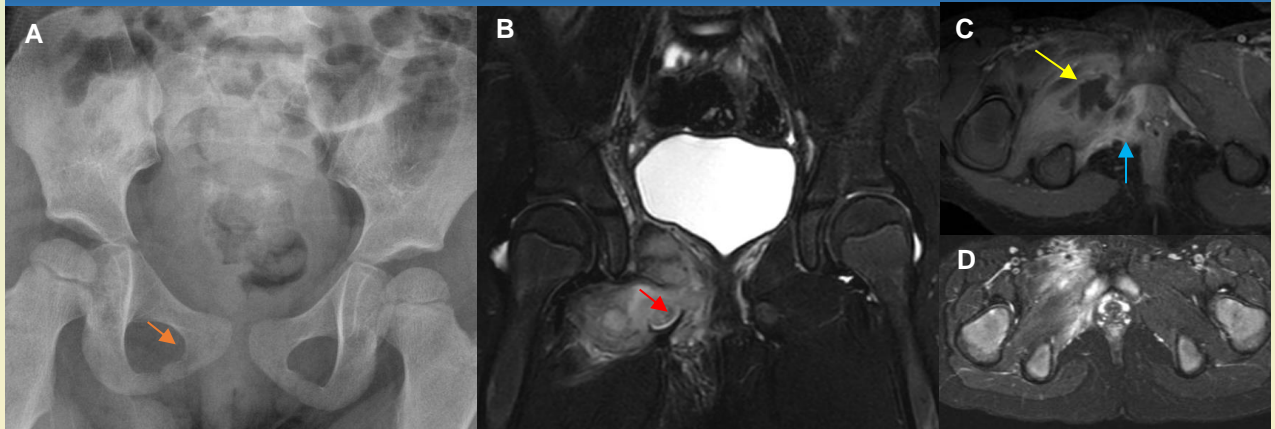


### Result ( Con't )

A 3 year-old female child with good past health and no wound presented with high fever and right hip pain not improving despite IV meropenem. Initial pelvis X-ray ( Fig 2A ) showed only subtle lytic changes at the right inferior pubic ramus next to the ischiopubic synchondrosis ( *orange arrow* ). MRI pelvis ( Coronal T2W FS – Fig. 2B and axial T1W+C FS – Fig. 2C ) showed a Brodie abscess ( *red arrow* ) at the right inferior pubic ramus. There is also extraosseous extension with abscesses at the right obturator externus ( *yellow arrow* ) and internus muscles and mild cellulitis at the right sided pelvis ( *blue arrow* ).

The muscle collections were too deep to be visualized by ultrasound. Orthopedic team performed surgical drainage of Brodie and obturator muscle abscesses with no sequestrum was found. Antibiotics regimen was adjusted based on the culture and sensitivity test of the drained pus which yielded Salmonella group D. Subsequent follow-up MRI pelvis ( T1W+C FS – Fig 2D ) found resolution of abscesses and interval resolution of osteomyelitis and cellulitis of soft tissue ( Fig. 2D ).

Fig. 2 : Images of the patient before and after surgical drainage



### Conclusion

Contrast MRI pelvis is the gold standard radiation-free imaging tool for pelvic osteomyelitis with the highest sensitivity and specificity ( both above 95% ) among all modalities. It can accurately determine the extent of infection involving bone and soft tissue of pelvis to guide for surgical drainage.

### References

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