

# The Growing-Skull Fracture of Childhood

P. M. LEARY, B. J. CREMIN

## SUMMARY

An isolated bony defect in the skull of an infant often indicates a serious disease. This appearance may, however, follow weeks or months after simple trauma, in which case the prognosis is good. Two cases are described.

*S. Afr. Med. J.*, 48, 415 (1974).

A well-defined localised defect in an infant's skull may be caused by one of a number of different pathological processes. Uncommonly, such a defect may occur as a sequel to a simple fracture of the skull, giving rise to an alarming, but none the less benign, physical sign and X-ray appearance. Two children exhibiting this phenomenon have recently been seen at the Red Cross War Memorial Children's Hospital.

## CASE REPORTS

### Case 1

A Black female, aged 2 months, was brought to the hospital on 20 January 1973, after being dropped from a height of about 70 cm, onto her head. On examination she was fully conscious and there was no clinical evidence of injury. A skull X-ray film was not taken. Four months later a doctor at a welfare clinic referred the infant to the hospital for opinion because it seemed that the posterior fontanelle was still open. On examination, the patient

looked well and her mass was good for her age. She showed normal motor development and there were no neurological abnormalities. The head circumference was not above normal. In the midline, just anterior to the lambda, a defect 3 cm in diameter was palpable. The edges were well defined and through it pulsation was detected.

### Case 2

A Black male, aged 16 months, was referred from Butterworth in the Transkei, because his mother had noticed 2 defects in his skull. He had been involved in a motor vehicle accident when he was 11 months old and had shown a large haematoma of the scalp over the right frontal and parietal bones. A skull X-ray film taken at the time did not reveal a fracture. On examination, the child was in a very poor nutritional state and weighed only 8 kg. There were 2 well-defined defects in the right frontal bone, with diameters of 2 cm and 3 cm; pulsation was palpable through both. Full clinical examination did not reveal any other abnormalities and the head circumference was normal for the child's age. The X-ray appearance of the child's skull is shown in Figs 1 and 2. Two months later the child had gained 2 kg and looked generally very much better. The skull defects were unchanged.

## DISCUSSION

The bony defect described has been called the 'growing-skull fracture of childhood'.<sup>1</sup> It occurs only in infancy and childhood, and usually develops from a small depressed or comminuted fracture, but may also occur after a small linear lesion.<sup>2</sup> The margins of the lucent area are usually scalloped and sclerotic, and sometimes the old fracture line may be seen aligned to this area.<sup>3</sup>

The skull fracture is associated with a dural tear and

---

Department of Paediatrics and Child Health and Department of Radiology, University of Cape Town, and Red Cross War Memorial Children's Hospital, Cape Town

P. M. LEARY, M.D., F.C.P. (S.A.) D.C.H.  
B. J. CREMIN, F.F.R.

---

Date received: 29 August 1973.

herniation of the arachnoid through the tear into the fracture line.<sup>4</sup> A leptomenigeal cyst forms, which causes bone erosion by transmitting the brain pulsation. This is the generally accepted mode of causation, but the deve-



Fig. 1. Case 2. Lateral view of skull showing bony defects.

lopment of a porencephalic cyst may also occur after surgical trauma of the skull.<sup>4</sup> Lende states that underlying, local brain injury is a constant feature, and focal neurological signs are common.<sup>1</sup> (There were no signs of brain injury in the 2 cases we report.)

The X-ray appearance may be alarming, particularly when there is no antecedent history of trauma. The differential diagnosis includes well-defined cavernous haemangiomas and intradiploic dermoids, which are usually situated at sutures. An eosinophilic granuloma may also cause an irregular lucency with defined edges. Other causes of bone defects<sup>2</sup> in the skull of the child are secondary neuroblastoma, leukaemic deposits, and osteomyelitis, but none of these will have the clear-cut and elongated appearance of the growing fracture.

Of considerable interest is the suggestion made by Alajouanine and Thurel,<sup>3</sup> that at least some of the holes found in ancient skulls, long cited by archaeologists as evidence of primitive trephination, may, in fact, not be

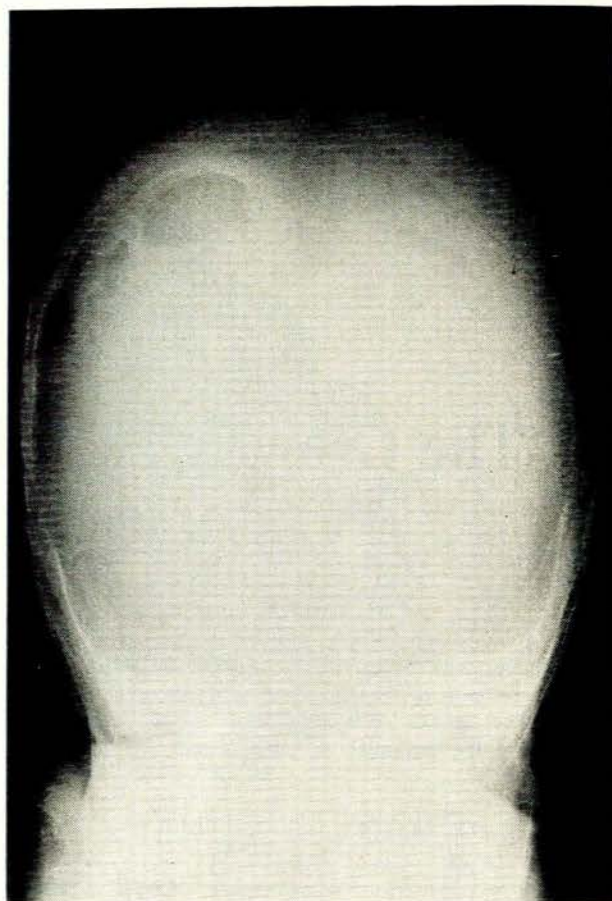


Fig. 2. Case 2. Anteroposterior view of bony defects.

early examples of the neurosurgeon's art, but growing-skull fractures sustained in infancy.

#### REFERENCES

1. Lende, R. A. and Erickson, T. C. (1961): *J. Neurosurg.*, **18**, 479.
2. Du Boulay, G. H. (1965): *Principles of X-ray Diagnosis of the Skull*. London: Butterworths.
3. Taveras, J. M. and Ronsohoff, J. (1953): *J. Neurosurg.*, **10**, 233.
4. Gruber, F. H. (1969): *Amer. J. Roentgenol.*, **105**, 305.
5. Alajouanine, T. and Thurel, R. (1945): *Rev. Neurol.*, **77**, 71.