Growing Skull Fractures of Childhood. 
A Particular Form of Posttraumatic Encephalopathy

By
C. Arseni* and M. D. Simionescu**

With 14 Figures

Introduction

Although this pathological entity has been known for almost 150 years, since the first case reported by John Howship (cited by Lende and Erickson, 1961), it has not excited much special interest. At first surgeons were content to describe the local clinical aspects, without considering the underlying meningo-cerebral lesions; hence, the initial terms of "meningocele spuria" given by Billroth in 1862, and "cephalhydrocele traumatica" by de Quervain in 1896 (Pia and Tönnis, 1953).

Later on, with the introduction of X-rays the two main features of this pathological picture were revealed: the existence of bone gaps in the skull vault and of a fluid collection below the scalp communicating with the pericerebral spaces, which led Dyke, in 1937 to introduce the term of leptomeningeal cyst for this state (cited by Lende and Erickson, 1961).

It should be recalled that the earlier studies deal only with the anatomico-clinical aspects appearing during the first period after the childhood trauma whilst the evolutive aspects and the final stages escaped notice (Pia and Tönnis, 1953).

The surgical approach was initially both blind and inefficient so that no light was thrown upon the anatomical extent of the lesions and their significance.

It has been only during the last ten to fifteen years, when neurosurgical interventions were carried out for radical curative purposes (Pia and Tönnis, 1953) that it has become possible to appraise the aetiological relationship of the anatomical lesions (extending from beneath the scalp down to the ventricular system) to the initial trauma. A complete definition of this pathological state being too long and unwieldy, we have in the following pages, used the term proposed by Pia and Tönnis (1953) of "growing skull fracture of childhood", which also has the advantage that it indicates the inexorably evolutive character of this pathological state.

* Professor of Neurosurgery.
** Consultant Neurosurgeon.
The present paper is based upon 12 patients admitted to the Clinic of Neurosurgery, Bucharest, between the years 1935 and 1965 whose records have all been checked from the clinical, radiological, surgical and anatomical points of view.

The incidence of this pathological state is low, ranging between 0.03 and 0.05 per cent of the total number of closed cranio-cerebral injuries of childhood (in our statistics 0.03 per cent).

![Fig. 1. Case 3. Lateral projection, standard incidence. Note the two bone defects and the alteration in the structure of the bone edges (for case 3, also see text).](image)

The etiological factors responsible for the evolution of this pathological state may be grouped according to the different periods:

a) An initial period, lasting from several hours to several days, in which the basic essential aetiological factor is a closed head injury resulting in a skull fracture (without diastasis and without depression) which must by definition be accompanied by rupture of the pericranium and laceration of the dura, which at this age adheres intimately to the skull. To this, a tear of the pia mater, cerebral contusion and laceration are added.

The cause of the injury may be either obstetrical trauma or a fall from the cradle or bed (50 per cent of the cases), or trauma due to the throwing of a hard object (25 per cent). In the remaining cases the nature of the trauma was not determined.

b) In the second period the main feature is the delayed healing of the fracture line. The factors that condition the delay are multiple but their