CRANIOPLASTY AND THE POST-TRAUMATIC SYNDROME

EVERETT G. GRANTHAM, M.D.,* AND HARRY P. LANDIS, M.D.†

(Received for publication August 4, 1947)

Since the beginning of World War II, there has developed a voluminous literature on cranioplasty.1,2,3,4,6,7,8,9,10,11,12,13 Most of these contributions deal with the use of tantalum to repair skull defects. In a search of recent and older literature on the subject, it is amazing to find how few of the articles make any reference to the indications for cranioplasty. Grant and Norcross7 in their comprehensive study state that one of the indications for cranioplasty is severe headache and other symptoms of the “trephined” (dizziness, undue fatigability, vague discomfort at the site of the defect, a feeling of apprehension and insecurity, mental depression and intolerance to vibration). In the same paper they state that following skull repair the syndrome of the trephined is relieved in a large majority of cases. Interestingly, these same authors quote Tuffier and Guillain as concluding that skull repairs are useful only for cosmetic results. Woodhall and Spurling14 in a recent article also list the syndrome of the trephined as an indication for performing cranioplasty. They state, however, that vertigo and generalized headache without localized tenderness are less common complaints and appear unaffected by cranioplasty. They also are of the opinion that these complaints probably represent the sequelae of the cerebral injury. They noted that the complaint of local tenderness on palpation of the area of the defect was benefited by cranioplasty.

Gardner5 believes the syndrome of the trephined would not be apt to occur if skull defects were repaired immediately. He states,

In the trephined patient the relation between the cranial defect and symptoms of dizziness, faintness, head pains, poor memory, irritability, or convulsions is frequently ignored, and the symptoms are attributed to brain damage incident to the trauma or operation. This, despite the fact that a fundamental physiologic principle is crying out for recognition, namely, that within the trephined skull the brain pulsates with each change in arterial or venous pressure, whereas in the intact skull the brain does not pulsate.

Since immobilization is important in wounds of baser tissues, it should be doubly important in the case of wounds of the brain. But when the surgeon closes the scalp over a brain wound without repairing the cranial defect, he not only has not immobilized the structures, he has allowed them to remain in a constant state of pathologic mobility.

We have collected 100 cases from the U. S. Army Service of the Thomas M. England General Hospital in order to study the effects of cranioplasty upon the syndrome of the trephined. Headache and dizziness were found to be the only serious and/or common complaints of these patients. A special

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* 405 Heyburn Building, Louisville 2, Kentucky.
† 901 Columbia Avenue, Palmyra, New Jersey.
effort was made to establish a feeling of confidence between the patient and the medical officer. By this means we attempted to eliminate or minimize unreliable answers to our questions. We realized that many patients in their eagerness to obtain a discharge or compensation might give answers with an ulterior motive. They were told that the information was for medical purposes and was in no way connected with official matters. Following the skull repair, patients were usually in the hospital for several months before being discharged. During this period they received other treatment which consisted chiefly of physical and occupational therapy. Final information was obtained just before they left the hospital, actually after they had been discharged from the Army and knew that their Army career was over.

It might be noted that every patient who arrived at our hospital with a skull defect wanted a repair. Invariably he had been told in the successive installations through which he had passed in the evacuation to the zone of the interior that he needed a skull plate and often he had also been told that all of his ailments would be cured by the application of this plate. One of our first efforts was an attempt to correct many misconceptions as to the value of a skull plate. Many even expected relief of hemiparesis. These patients were all young, the oldest being 38 years of age. All had received a penetrating wound which included the dura. They all had a desire to again have a sound head. This was probably the most universal reason for a desire for a skull plate. They stated that they didn’t feel whole, nor did they feel that the Army would be doing its part in rehabilitating them if they should be discharged “not being whole,” even though the defect was no more than the size of an ordinary burr hole. Many feared the exploring fingers of sweethearts or wives. One out of four volunteered this specific reason for wanting a defect repaired.

This study indicated that only 54 per cent of the patients complained of any headache whatsoever prior to their cranioplasty. Efforts to analyze the characteristics of these headaches were often discouraging. They were generally bilateral and in most cases they occurred every day. It was surprising, however, to find that many patients could not say precisely whether the headache was always bilateral or unilateral, or whether it occurred daily, and, if so, for how much of the day. The size of the cranial defect had no apparent relationship to the probability of the patient developing headache. Neither did the location in the skull have any relationship to the headache or its severity. The majority could not describe the character of the headache accurately, but those who did said it was either throbbing or a sense of pressure.

Sixteen patients stated their headaches were cured after cranioplasty. Six others believed the headaches to be less severe. Thirty-two, or 59 per cent of those who had suffered with headaches prior to cranioplasty, stated there had been no change in their headaches. Four patients stated that they had developed headaches for the first time since their operation. In other words,