Neurosurgical Classic—XVII

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The Edwin Smith Surgical Papyrus, dating from the seventeenth century B.C., is one of the oldest of all known medical papyri. Its differs fundamentally from the others in the following ways:

1. The seventeen columns on the recto comprise part of a surgical treatise, the first thus far discovered in the ancient Orient, whether in Egypt or Asia. It is therefore the oldest known surgical treatise.

2. This surgical treatise consists exclusively of cases, not recipes.

3. The treatise is systematically organized in an arrangement of cases, which begin with injuries of the head and proceed downward through the body, like a modern treatise on anatomy.

4. The treatment of these injuries is rational and chiefly surgical; there is resort to magic in only one case out of the forty-eight cases preserved.

5. Each case is classified by one of three different verdicts: (1) favorable, (2) uncertain, or (3) unfavorable. The third verdict, expressed in the words, ‘an ailment not to be treated,’ is found in no other Egyptian medical treatise.

6. This unfavorable verdict occurring fourteen times in the Edwin Smith Papyrus marks a group of cases (besides one more case) which the surgeon cannot cure and which he is led to discuss by his scientific interest in the phenomena disclosed by his examination.’”

It is of special interest to the neurosurgeon because it contains the first descriptions of the cranial sutures, the meninges, the external surface of the brain, the cerebrospinal fluid, and the intracranial pulsations. It also contains the first accounts of surgical stitching and of various types of dressings. Brain injuries are noticed to be associated with changes in the function of other parts of the body, especially the lower limbs, and hemiplegic contractures are described in Case 8. Changes in bodily functions are also described in association with injuries of the cervical spine. Case 31 contains the first description of quadriplegia, urinary incontinence, priapism, and seminal emission following cervical vertebral dislocation.

The Egyptologist who brought this manuscript to light, Edwin Smith, was born in Connecticut in 1822, the year that Egyptian hieroglyphic was first deciphered. In Luxor, Egypt, in 1862, Smith bought an ancient manuscript roll which lacked some of its outer portions. Two months later the same vandals sold him the remaining fragments glued onto a dummy roll. Although Smith recognized the fraud, pieced the two together, and made an attempt at translation, it was not until 1930 that James H. Breasted translated the treatise and established its importance. Breasted was then Director of the University of Chicago Oriental Institute, and had been requested by the New York Historical Society to translate the papyrus, which the Society had received in 1906 from Edwin Smith’s daughter.

According to Breasted, the Edwin Smith Papyrus is a copy of an ancient composite manuscript which contained, in addition to the original author’s text (3000–2500 B.C.), a commentary added a few hundred years later in the form of 69 explanatory notes (glosses). It contains 48 systematically arranged case histories, beginning with injuries of the head and proceeding downward to the thorax and spine, where the document unfortunately breaks off. These cases are typical rather than individual, and each presentation of a case is divided into title, examination, diagnosis, and treatment. There is a definite differentiation between rational surgical treatments and the much less employed medico-magical measures. Significantly, trepanation is not mentioned.

The scribe who copied the Edwin Smith Papyrus from the earlier document in the seventeenth century B.C. made many errors some of which he corrected in the margins.
The beginning and end of the original document are missing from the copy, and the name of the author is not present.

"The scribe of over 3,500 years ago, to whom we owe our present manuscript, could have had little consciousness of the momentous decision he, or possibly some one for him, was making when he pushed aside the ancient Surgical Treatise, then already a thousand years old, while his own copy was still incomplete. He had copied at least eighteen columns of the venerable treatise and had reached the bottom of a column when, pausing in the middle of a line, in the middle of a sentence, in the middle of a word, he... laid down his pen and pushed aside forever the great Surgical Treatise he had been copying, leaving $15\frac{1}{2}$ inches (39 cm.) bare and unwritten at the end of his roll."71

Of the 48 cases described in the Edwin Smith Papyrus, 27 concern head trauma and 6 deal with spine trauma. Of the 27 head injuries, 4 are deep scalp wounds exposing the skull, and 11 are skull fractures.

"The latter, according to our present day terminology would be classified as follows: two compound linear fractures; four compound depressed fractures; four compound comminuted fractures; and one comminuted fracture without external wound. The symptoms and signs of head injury are given in considerable detail. Feeble pulse and fever are associated with hopeless injuries and deafness as well as aphasia are recognized in fractures of the temporal region."75

The following thirteen cases are reproduced, in part, from Breasted’s classic translation:*2

Case Two

Title: Instructions concerning a [gaping] wound [in his head], penetrating to the bone. Examination: If thou examinest a man having a [gaping] wound [in] his [head], penetrating to the bone, thou shouldst lay thy hand upon it (and) [thou shouldst] palpate his [wound]. If thou findest his skull [uninjured, not having a perforation in it].

Diagnosis: Thou shouldst say regarding [him]: "One hav[ing a gaping wound] in his head. An ailment which I will treat."

Treatment: [Thou] shouldst bind [fresh meat] upon it the first day; thou shouldst apply for him two strips of linen, and treat afterward with grease, honey, (and) lint every day until he recovers.

Gloss: As for: "Two strips of linen," [it means] two hands [of linen which one applies upon the two lips of the gaping wound in order to cause that one join] to the other.

Case Three

Title: [Instructions concerning] a gaping [wound] in his head, penetrating to the bone (and) perforating his [skull].

Examination: If thou examinest a man having a gaping wound [in] his [head], penetrating to the bone, (and) perforating his skull; thou shouldst palpate his wound; [shouldst thou find him unable to look at his two shoulders] and his [breast], (and) suffering with stiffness in his neck . . .

Diagnosis: Thou shouldst say [regarding him]: "One having [a gaping wound in his head, penetrating to the bone, (and) perforating his skull], while he suffers with stiffness in his neck. An ailment which I will treat."

Treatment: Now [after thou has stitched it, thou shouldst] lay fresh [meat] upon his wound the first day. Thou shouldst not bind it. Moor (him) [at his mooring stakes until the period of his injury passes by]. Thou shouldst [treat] it afterward with grease, honey, and lint every day, until he recovers . . .

Gloss: As for: "Moor (him) at his mooring stakes," it means putting him on his customary diet, without administering to him a prescription.

Case Four

Title: Instructions concerning a gaping wound in his head, penetrating to the bone, (and) splitting his skull.

Examination: If thou examinest a man having a gaping wound in his head, penetrating to the bone, (and) splitting his skull, thou shouldst palpate his wound. Shouldst thou find something disturbing therein under thy fingers, (and) he shudders exceedingly, while the swelling which is over it protrudes, he discharges blood from both his nostrils (and) from both his ears, he suffers with stiffness in his neck, so that he is unable to look at his two shoulders and his breast . . .

Diagnosis: Thou shouldst say regarding him: "One having a gaping wound in his head, penetrating to the bone, (and) splitting his skull; while he discharges blood from both his nostrils (and) from both his ears, (and) he suffers with stiffness in his neck. An ailment with which I will contend."

Treatment: Now when thou findest that the skull of that man is split, thou shouldst not bind him, (but) moor (him) at his mooring stakes until

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