

Skull Dysfunction

1: A "Skullache" Model to Explain Headache and Facial Pain

Joint pain is common throughout the body. People experience pain in every joint in the neck, trunk, and upper and lower extremities. All joints of the body below the skull are subject to pain when stressed through subluxation, dislocation, traction, or compression. It is reasonable, therefore, to suspect that the skull joints would generate pain signals under the same conditions. *The joints of the skull, however, have been virtually ignored as possible sources of headache and facial pain.*

Despite years of investigation, we still don't understand the mechanism of headache and facial pain, sources of widespread human suffering. The soft tissue structures of the head have been thoroughly investigated, but no proposed mechanism satisfactorily explains all headache and facial pain. In his review of the field, Heyck (1) points out the failure of any one explanation to account for all the features and variability of headaches.

Could the common mechanism for headache and facial pain be the joints of the skull? Could individuals, in fact, be experiencing skull (cranial-facial) joint pain when they have a headache? Is headache really "skullache"? This possibility has been overlooked too long.

Anatomy of the Skull's Joints

The adult skull is a structure of 23 separate bones that form 67 jointed unions (see Figures 1-4 and Table 1). Additional jointed unions are formed by the gomphosal joints of the teeth in the maxilla and mandible and by the auditory ossicles, attached to each other and to the temporal bone. Infant and juvenile skulls, which are further segmented by unfused ossification centers, contain even more pseudo-jointed unions.

In 1978, Retzlaff and Mitchel (2) showed that skull joints have neurologic innervation by myelinated and unmyelinated fibers. If some of these fibers transmit pain, as they do elsewhere in the body, then pain from the skull joints would manifest itself as headache or facial pain. Given the existence of these fibers, in all probability they play a role in transmitting pain.

Upledger and Retzlaff et al. (3), and Upledger and Vredevoogd (4, 5) make the argument for pain originating in the skull joints. However, they fall short of expressing the full impact of skull joint pain and its relationship to headache and facial pain.

The "Skullache" Model

"Skullache" is suggested by this author as a proper descriptive term for these headache and facial pain syndromes. A flowchart describing the model is provided in Figure 5. This model encompasses much of what is known about headache and facial pain and appears likely to embody the true etiology of the final common pathway of the production of headache and facial pain. The evidence for this follows.

Characteristics of Headaches

Individuals commonly report a multitude of triggers as the cause for the onset of a headache or facial pain.

Individuals with headache and facial pain often report seemingly bizarre symptom complexes accompanying their primary complaint. Some common concurrent complaints are nausea, tinnitus, confusion, bruxism, vertigo, altered vision, and abnormal lacrimation.

Individuals experience various chronological patterns to their headaches and facial pains.

Individuals report a variety of locations for their headaches and facial pains, the location often shifting during an episode, and also shifting from one episode to another.

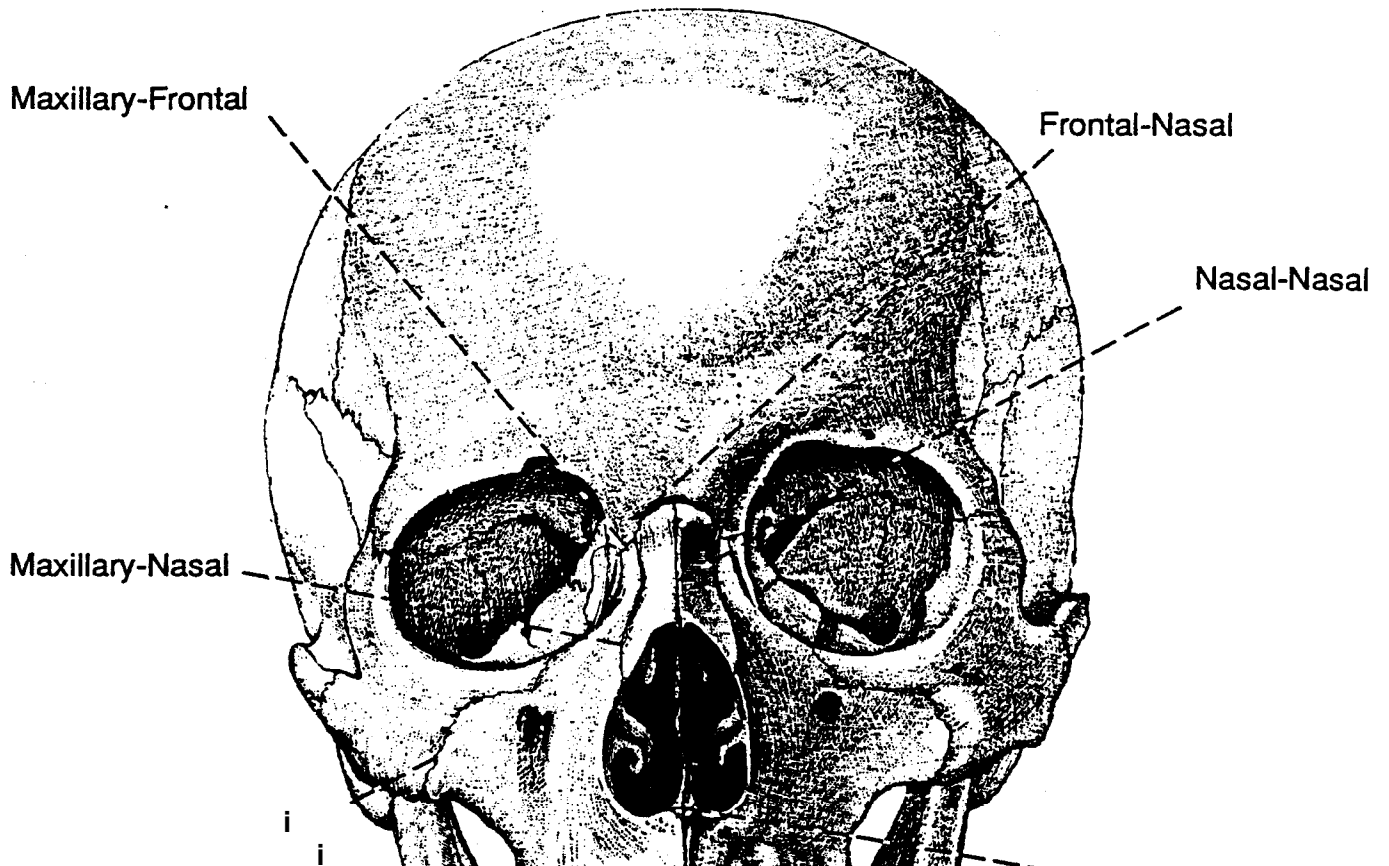
The challenge has always been to explain in one consistent theoretical model the multiple triggers, diverse symptoms, chronological characteristics and variability of location associated with headache and facial pain. Such a model can be developed through a skull joint approach.

Variability of Triggers. A "skullache" model explains the variability in the "triggers" that many individuals report for their headaches and facial pains. Typical triggers include emotional stress, exposure to toxins or certain foods, menstrual cycle changes, atmospheric pressure changes, fever, and eye strain. The common feature shared by these triggers is that they all place the skull's joints under stress through various physical mechanisms. Table 2 shows various common headache and facial pain triggers and the resultant mechanisms by which they place stress upon the skull's joints.

Variability of Associated Symptoms. A "skullache" model explains the variability in symptomology accompanying headache and facial pain. We know that physical stress on the soft tissue structures within the skull, including the 12 cranial nerves, pituitary gland, brain, brainstem, eyes, ears and vascular system may cause dysfunction, just as abnormal physical stress anywhere in the body is often accompanied by dysfunction. Skull joint pathology causes soft tissue stress, either directly or indirectly through intermediate structures or processes.

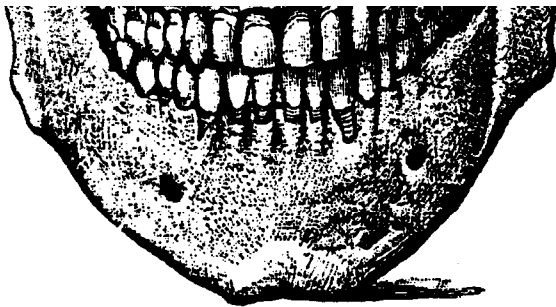
Variability of Chronological Aspects. Almost everyone experiences headache and facial pain at some point in his or her life. Some individuals have

FIGURE 1
adapted from Toldt (42)

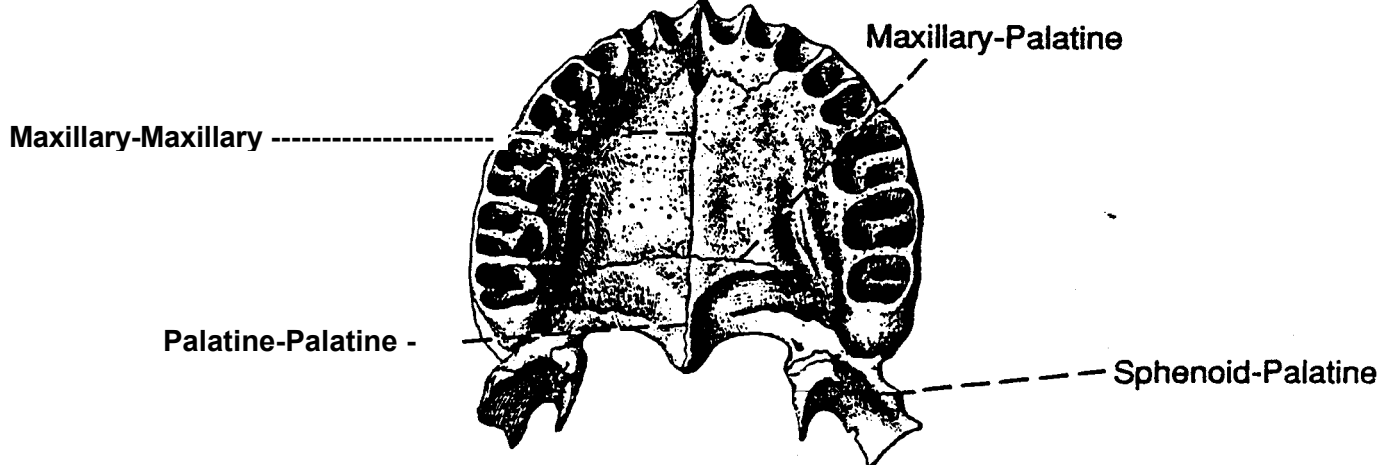


Maxillary-Zygomatic

Maxillary-Vomer

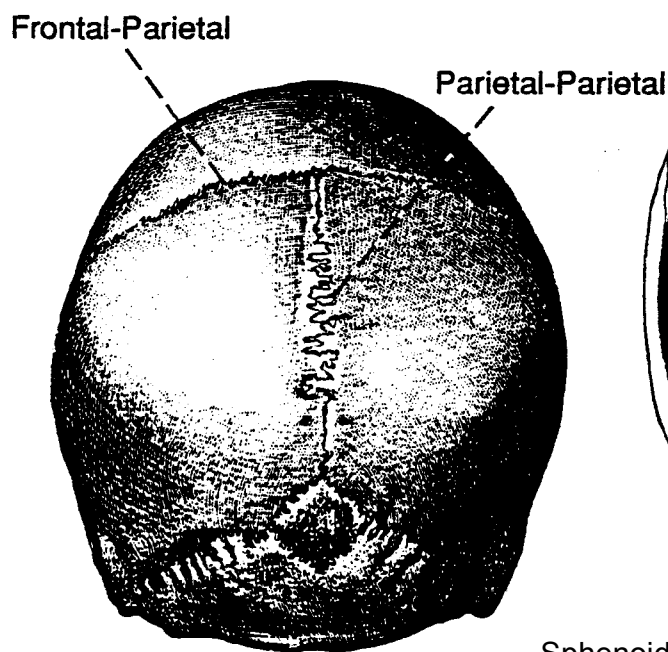
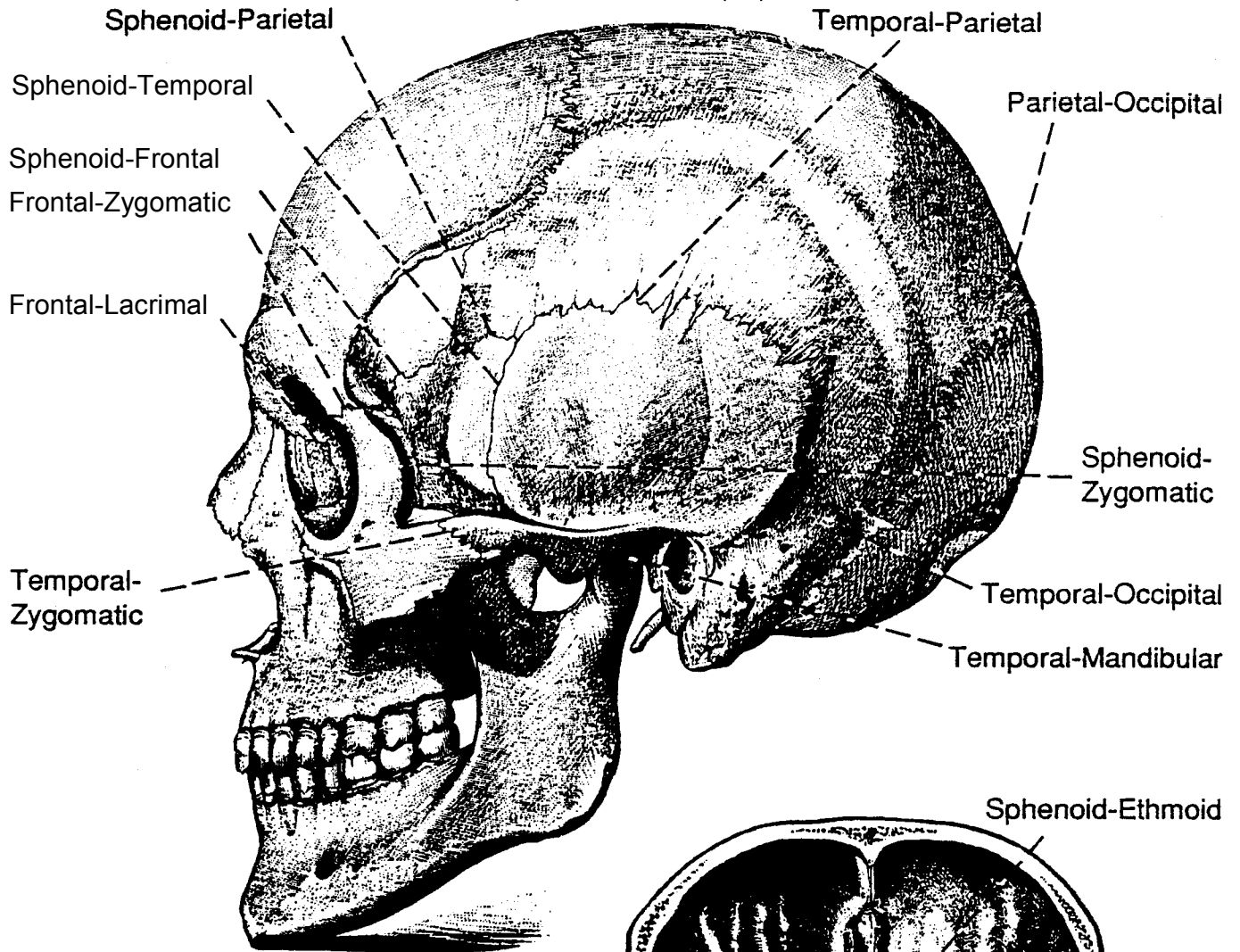


Anterior-Posterior View

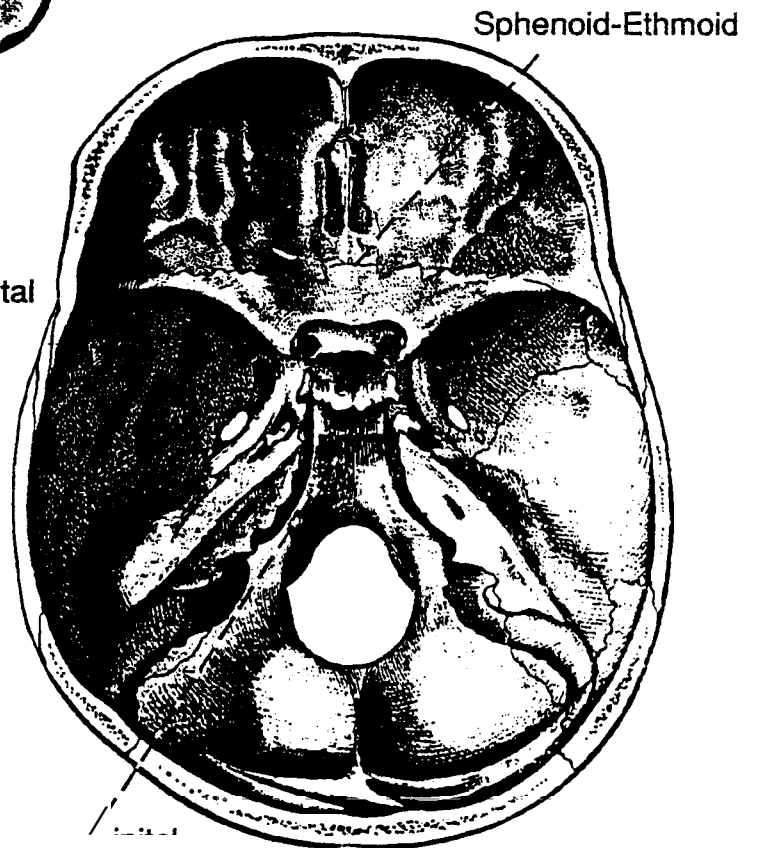


Inferior-Superior Palate Region View

FIGURE 2
adapted from Toldt (42)



Superior-inferior View



*Superior-Inferior View
with Calverium Removed*

FIGURE 3
adapted from Toldt (42)

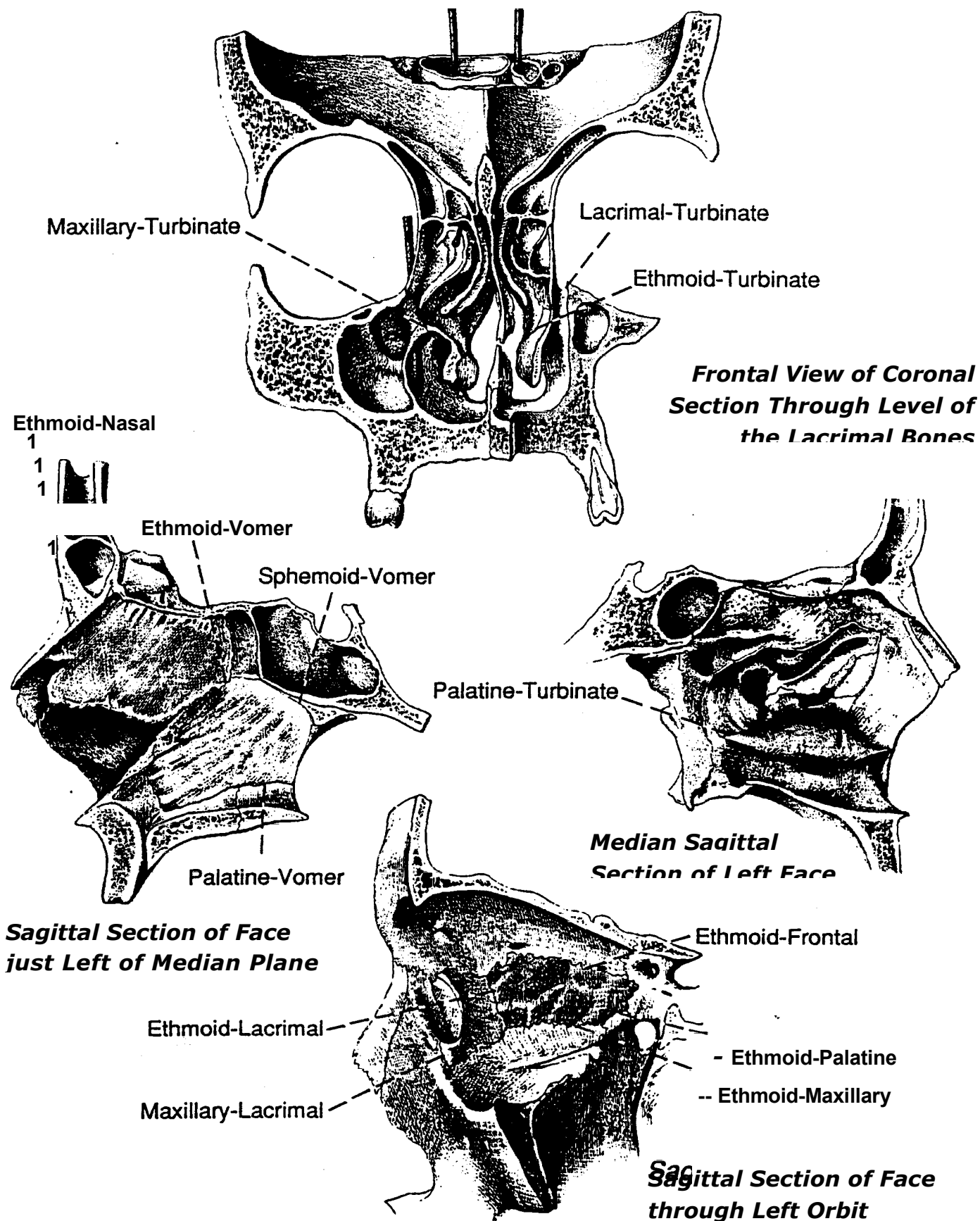
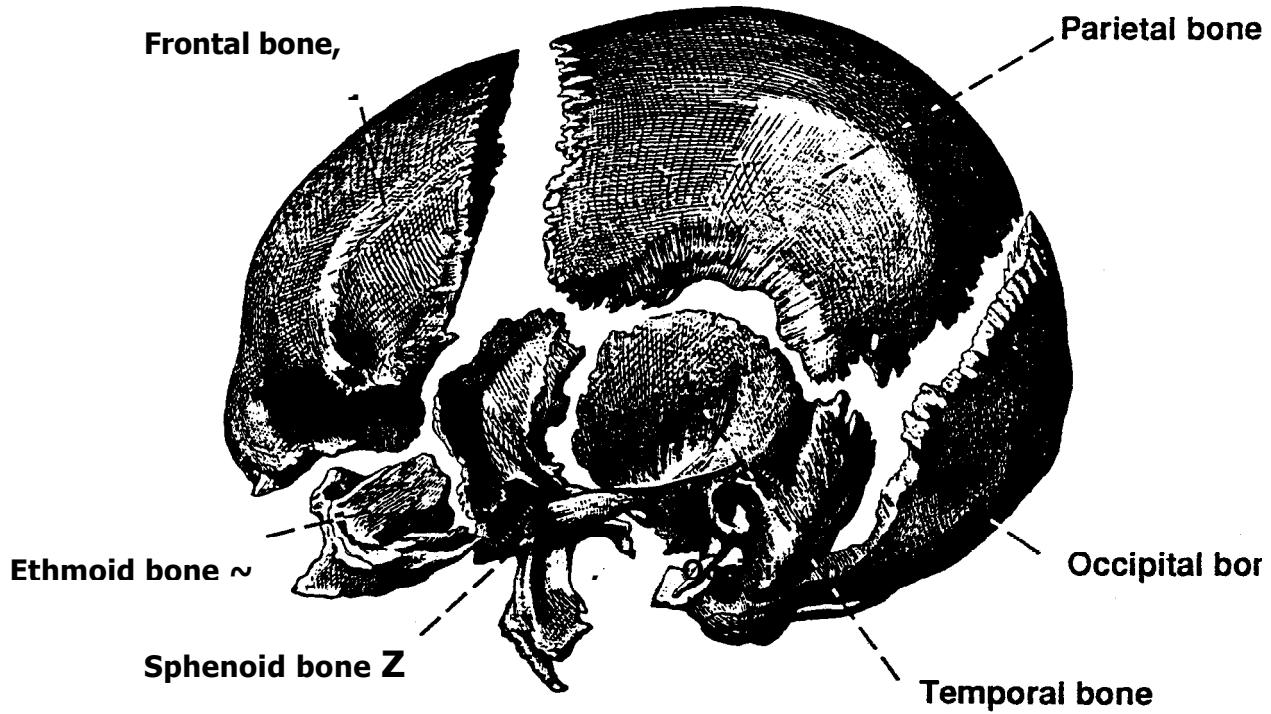
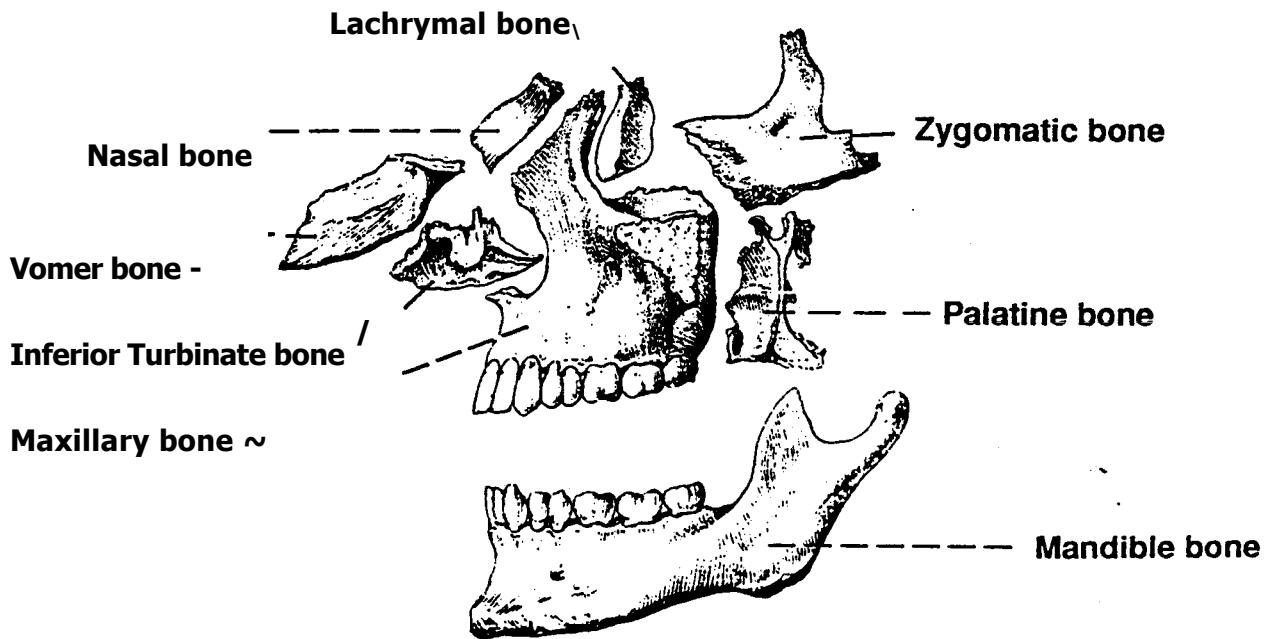


FIGURE 4
adapted from Toldt (42)



THE SEPARATED BONES OF THE CRANIAL PORTION OF THE SKULL



THE SEPARATED BONES OF THE FACIAL PORTION OF THE SKULL

TABLE 1
THE SKULL'S JOINTS"

Sphenoid-Ethmoid (M)	Maxillary-Nasal(P)
Sphenoid-Occipital(M)	Maxillary-Lacrimal (P)
Sphenoid-Frontal(M)	Maxillary-Palatine (P)
Sphenoid-Vomer (M)	Maxillary-Zygomatic (P)
Sphenoid-Temporal (P)	Frontal-Parietal (P)
Sphenoid-Parietal (P)	Frontal-Zygomatic (P)
Sphenoid-Zygomatic (P)	Frontal-Nasal (P) Frontal-
Sphenoid-Palatine (P)	Lacrimal (P) Temporal-
Ethmoid-Vomer (M)	Parietal (P) Temporal-
Ethmoid-Palatine (P)	Occipital (P) Temporal-
Ethmoid-Maxillary (P)	Mandibular (P) Temporal-
Ethmoid-Turbinate (P)	Zygomatic (P) Palatine-
Ethmoid-Nasal (P)	Palatine (M) Palatine-
Ethmoid-Lacrimal (P)	Vomer (P) Palatine-
Ethmoid-Frontal (P)	Turbinate (P) Parietal-
Maxillary-Maxillary (M)	Parietal (M) Parietal-
Maxillary-Frontal (P)	Occipital (P) Lacrimal-
Maxillary-Vomer (P)	Turbinate (P) Nasal-Nasal
Maxillary-Turbinate (P)	(M)

*Excluding the dental gomphosal and auditory occicle joints. (P)

= paired (M) = midline

pain continually; others only occasionally, with episodes separated by weeks, months, or years. Still others report abrupt onsets and cessations, with periods of sustained pain followed by pain-free periods. Using a "skullache" model, the chronology of episodes or periods of headache and facial pain are seen to be identical to the chronology characteristic of joint dysfunction and pain elsewhere in the body. As with other joint dysfunction, headache and facial pain in different individuals (and at different times) may occur gradually or suddenly, may cease gradually or suddenly, and may often be self-limiting.

Throbbing headaches, interpreted with a "skullache" model, are attributable to variations in the stress at the skull joints caused by the fluctuation of cerebral spinal fluid pressure and other internal body pressure changes associated with respiration and pulse.

Variability of Location. The variability in locations of headache and facial pain can be attributed to the multitude of skull joints-67 in all. Common loci of headaches are: retro-orbital region (7 bones and 12 joints); glabellar region (5 bones and 7 joints); temporal region (4 bones and 5 joints); Bregma region (3 bones and 4 joints); occipital region along the lamboidal joints; and the cheek or "sinus" region at the maxillary-zygomatic joint (see Figures 1-4).

All other skull joints are also subject to pain. When joints in multiple regions of the skull are involved, a person experiences pain as an "all over" or "band-like" headache.

Some headache and facial pain is difficult to localize because it is generated in joints deep within the skull. Other pain is hard to pinpoint due to its referred nature and sclerodermal distribution.

Headache and facial pain localization that changes with movement, position, or posture can be attributed to variations in the skull's joint stresses due to gravity or internal biomechanical forces.

Discussion

All treatments currently considered effective against headache and facial pain, with the possible exception of analgesics, effect relaxation of the skull joints, either directly or indirectly, through a decrease in muscle tension, swelling, or internal pressure differentials. Treatments that effect changes in the skull's joint stresses include relaxation techniques, biofeedback, thermotherapy (e.g. heat and ice), sinus drainage, pressure point therapy, and pressure regulating pharmaceuticals.

Furthermore, it is interesting to note that analgesics (e.g. aspirin, ibuprofen, acetaminophen) whose mechanisms of action are not well understood, are used to treat joint pain below the skull and also are used to treat headache and facial pain.

All of this suggests a commonality of origin for headache, facial pain, and joint pain elsewhere in the body. That is, headache and facial pain are in fact forms of joint pain. If this proves true, then joint pain in all its manifestations may be the single most common cause of human suffering and lost time.

Table 2

Headache/Facial Pain Triggers and Physical Forces Affecting the Skull's Joints

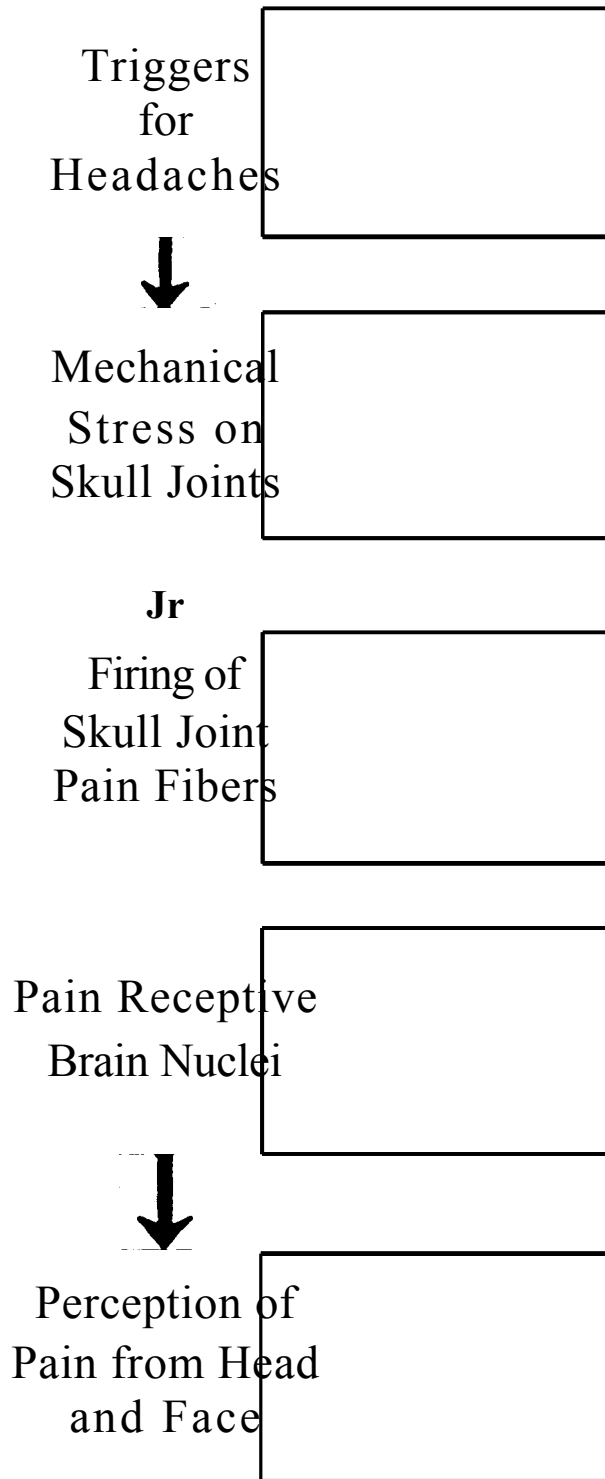
<u>Headache/Facial Pain Triager</u>	<u>Phvsical Force on Skull</u>
Emotional tension or stress	Muscular pulling on skull due to frowning of brow, clenching of jaw, frowning, etc. Increased sympathetic/adrenal output causing increased skull muscular tone.
Menstrual cycle changes	Water retention syndromes cause swelling and edema within the skull.
Sinus and Nasal Passage Congestion	Blockages, nose congestion and nose blowing create skull pressure.
Fever and infection	Generalized swelling within skull.
Foods, Toxins, and Allergins	Generalized swelling within skull. Hangover Swelling
or dehydration causes pressure in	the skull.
Weather changes, Flying, Diving	Internal skull air filled spaces unable to equilibrate to changes in atmospheric pressure.
High Blood Pressure	Internal Skull Pressure

Table 2 continued

Headache/Facial Pain Triggers and Physical Forces Affecting the Skull's Joints

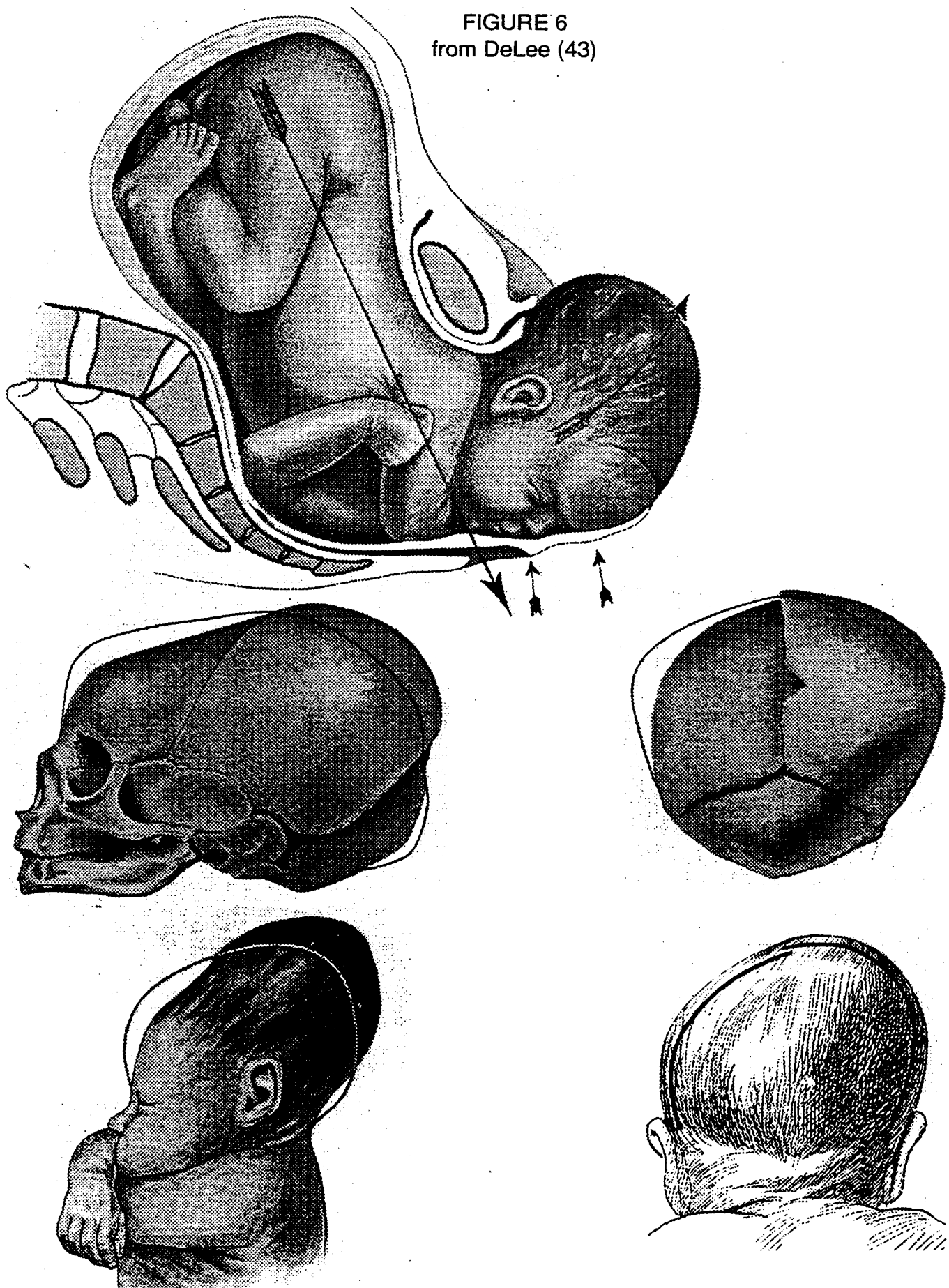
<u>Headache/Facial Pain trigger</u>	<u>Physical Force on Skull</u>
Eye, Strain	Pull on skull by eye and orbital muscles.
Poorly fitted eyeglass frames	Pressure upon nasal bridge and temporal regions of the skull.
Tight Hats, and Headbands	Compressive forces upon the skull.
Tight Hairstyles	Tractional forces upon the skull.
Cervical Spine Dysfunctions	Pull upon the skull through muscular, ligamentous, and meningeal connections.
Concussion and Facial Trauma	Spraining and subluxation of the skull joints. Skull pressure due to swelling.
Vascular Engorgement	internal skull pressure.
TMJ and Dental Malocclusion	Torques and pressures upon the skull.
Tumors and Aneurysms	internal skull pressure.

FIGURE 5



FLOWCHART OF SKULLACHE MODEL FOR PRODUCTION OF HEAD AND FACIAL PAIN

FIGURE 6
from DeLee (43)



CRANIAL BIRTH TRAUMA (BIRTH MOLDING)

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Dr. J. R. Stober, ND, DC,

who developed these theories and techniques during a lifetime of dedication.

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