

## Historical Article

# Ear, Nose and Throat in Ancient Egypt

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### Part II

#### *Nose*

##### *I Anatomy*

In Ebers Papyrus (99,854) we read: 'There are four vessels of the nostrils, two secrete humour and two secrete blood' (99, Ebbell, 1937). However, later on we read 'There are two vessels in him to his nose' (103, Ebbell, 1937). Ebbell explains this apparent discrepancy is due to the fact that they refer to two different types of vessels: the first are arteries as it is said that pulsation, or the 'speaking' of the heart, may be felt through these vessels; it is further stated that they provided the substance that is secreted from the nose. However, the second type of vessels are described as the canals through which diseases spread in the body; the vessels are said to have received (and transferred) the illness in question, thus it may be presumed that the veins were alluded to in the second list. It should be noted that in medical writings of the Ancient Egyptians there was no distinction between vessels (artery or vein), nerves, ligaments muscles or male member: the word *mt*, *mtw* was used for all these (Ebbell, 1937). The distinction between some of these anatomical structures was not clear even well into the modern time (Pahor, 1979).<sup>28</sup>

The ancient Egyptians had different nomenclature for: nose, nostrils, radix nasi, bony bridge, soft (cartilagenous) bridge, nasal septum and alae nasi (Breasted, 1930).

##### *II Physiology*

Ebers Papyrus in its anatomical physiological section denotes one of the functions of the nose: 'As to "the breath which enters into the nose": it enters into the heart and the lung; these give to the whole belly', (103, Ebbell, 1937). It was also recognised that the nose secretes mucous (*v.s.*). About the blood vessels in the body: 'All together (they) go to his heart, divide to his nose' (103, Ebbell, 1937). The other function of the nose: smell, is indicated in a transcript where it is stated that at Edfu the air and again the incense enters the nostrils of its god (Rochem, Edfu, I, 569

<sup>28</sup> However, the distinction between nerves and vessels was apparently the work of Erasistratos of Alexandria in the Third Century BC.

and 571). A treatment for sneezing was recorded (40, Ebbell, 137).

In a series of pieces of advice from a father to his son, one was that to sleep on the side is better than sleeping on the back. There is no mention of snoring! Also an advice is given that to sleep on the side with the head above the body is healthier. There is seemingly no mention of hiatus hernia either!

##### *III Mummification*

In the process of mummification, the brain was evacuated from the skull. The commonest route through which the embalmers used to remove the brain was the roof of the nose (cribriform plate) using fine instruments. In later dates, they used to remove a vertebra from the back of the neck and evacuate the brain through the foramen magnum (Gabbra, 1950; Strouhal and Vyhnánek, 1979) and then replace the vertebra. Other routes, though uncommon, were through the sphenoid bone or roof of the orbit. Special instruments were used for evacuating the brain (Fig. 10). Pirsig and Parsche (1991) studied 81 skulls and seven complete mummy heads and formulated a concept for creating the perforation in the cribriform plate. It is of interest to study their illustrations closely and is amazing how smooth (or finely nibbled) the holes are. The holes are far from being clumsily executed and would give credit even to a present day nasendoscopist! Leek (1986) also commented on how neat and small the 'perforations' are.

##### *IV Nasal catarrh*

Ebers (37, 192 and 90,762) deals with nasal catarrh. Thus we read: 'If thou examinest a man for illness in his cardia,<sup>29</sup> who secretes much, and thou findest it localised in his front, both his eyes are drooping, and his nose runs, then thou shalt say of him: it is due to putrefaction of his phlegm, his phlegm not having descended to his sacral region'. Then he proceeds to prescribe remedy 'until his eyes are opened, and his catarrh which descends as phlegm goes away' (38, Ebbell, 1937).

<sup>29</sup> Is meant: feeling of uneasiness (Kamal, 1964).

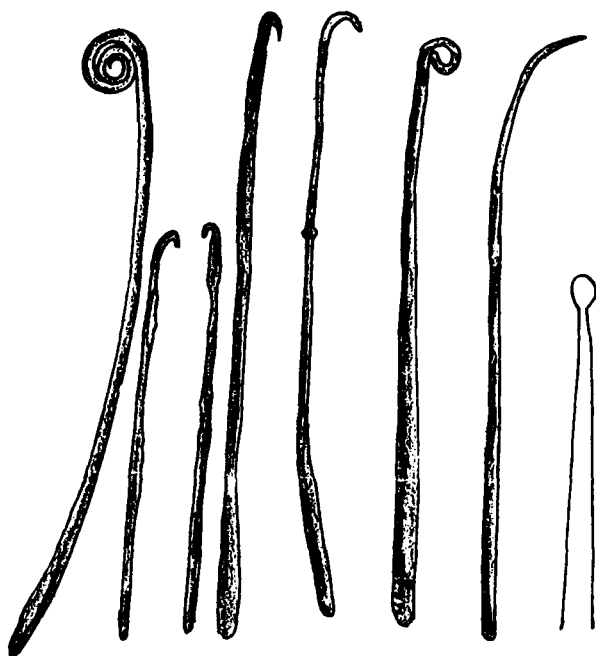


FIG. 10

Fine instruments—E.M. (Courtesy of Dr Khalil Messiha).

It seems from the above description that it is a case of nasal catarrh with sinusitis and postnasal discharge.

Further reference to catarrh was mentioned in the section dealing with diseases of the eye (59 and 63, Ebbell, 1937). It is possible that these may refer to allergic rhinitis and conjunctivitis because we read 'Another (i.e., remedy) to expel grain in the eye . . .' (63, Ebbell, 1937), a sensation present in allergic conjunctivitis. Asthma and weeping eczema were also known (53 and 73, Ebbell, 1937).

Reference was also made to the effect of nasal catarrh on the ear (v.s.).

#### V Opaque Maxillary Sinus

A radio-opaque lesion was demonstrated in a mummy in Tübingen (Pahl, 1986). Pahl considered it to be a benign tumour, however, it is possible that it was a rhinolith secondary to a foreign body in the sinus.<sup>30</sup>

Radiological examination of one of the three mummies<sup>31</sup> in the Victoria Museum, Melbourne, showed an opaque left maxillary sinus. It is thought that this was sinusitis following an apical dental abscess (Perkins and Hope, 1984).

Opaque sinuses in mummies can be the result of resinous fillings, this can be in the frontal sinus as well as the maxillary (Strouhal *et al.*, 1986).

#### VI Epistaxis

Was described as a 'symptom' of fractured nose (v.i.). Onion juice mixed with Styrae Benzoin was used to treat epistaxis (Abdel-Rahman, 1939). In traditional Islamic

<sup>30</sup> The author has encountered two cases of rhinolith in the antrum in his clinical practice (George and Pahor, 1992).

<sup>31</sup> These mummies date from late XIth early XIIth Dynasty. They were discovered in 1923, reached Australia in 1925 and were on display in the Museum until 1976.

medicine the ashes of papyrus were mixed with vinegar and used to treat nose bleeds (Manniche, 1989). Powder made from mummies (*Mumia Vera*) was used for epistaxis, and many other ointments, to the end of the 17th century and in some cases until the beginning of the 20th century (Strandberg, 1985).

#### VII Ozaena

Was described in Ebers Papyrus (90,761): 'The beginning of remedies against a foetid nose: date-wine, its opening is filled therewith'.

#### VIII Hypertrophied turbinates

Hypertrophied turbinate bones were discovered by A. Ruffer in a skull dating 1000 B.C. and in two skulls of the Greek period, also the same finding was reported by Leek (1986). Hypertrophy of the middle turbinates<sup>32</sup> were noted as well (El-Batrawy, 1935; Strouhal and Vyhnanek, 1979).

#### IX Nasal polyps

Nasal polyps are thought to have been described in Ancient Egypt (Ebers, 90, 763-v.s.) and possibly removed (Pahor and Kimura, 1990). Hooks may have been used.

#### X Foreign bodies

In a mummy of a priest of Amon of the XXIst Dynasty, a large vesical calculus (6.5 cm in diameter) was found placed in the nostril by the embalmer. It consisted of an uric acid nucleus surrounded by phosphates (Rowling, 1967). Did the Ancient Egyptians believe that vesical stones bring luck as does trichobezoars (hair-ball in the stomach) (Aird, 1949)!

#### XI Oro-antral fistula

A maxilla with an oro-antral fistula (Figs. 11 and 12) has been found in Giza (Leek, 1986). The fistula is caused by an apical abscess on a palatal root of an upper first molar. In Nubia, a skull was found with a fistula in the anterior wall of the right maxillary sinus and another skull with a fistula between the right maxillary sinus and orbit (El-Batrawy, 1935).

#### XII Injuries

In the Edwin Smith Papyrus (Breasted, 1930) we find the following cases of injuries to the nose with a far advanced level of management:

- (a) Case 11: 'Break in the column of his nose', in this case there was a swelling and blood discharge from nostrils. The surgeon recommends: 'Thou shouldst cleanse (it) for him with two plugs of linen saturated with grease in the inside of his two nostrils. Thou shouldst put him at his mooring stakes<sup>33</sup> until the swelling is reduced (lit. drawn out). Thou shouldst apply for him stiff rolls of linen by which his nose is

<sup>32</sup> It is likely that these are markedly pneumatized middle turbinates (*concha bullosa*).

<sup>33</sup> For explanation of this idiom v.s.

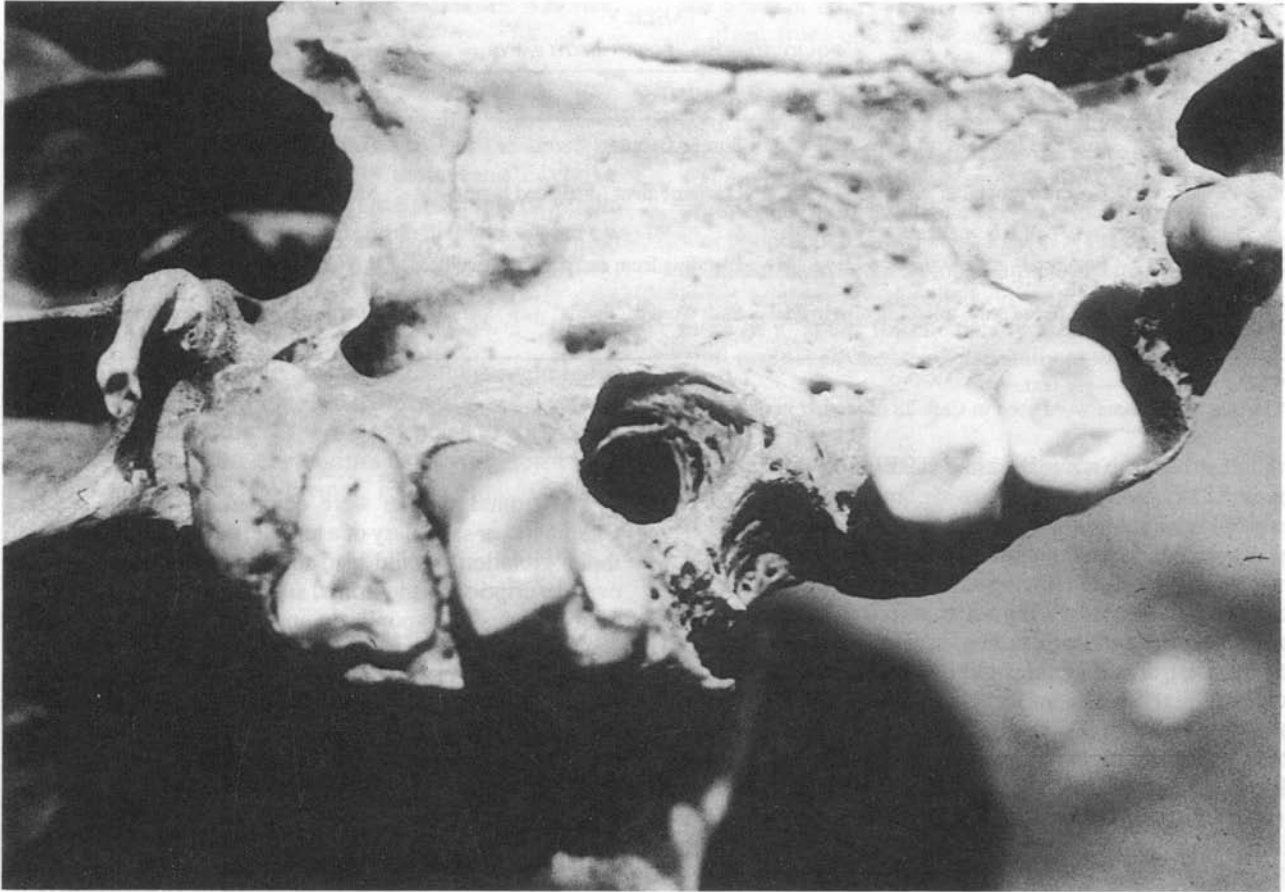


FIG. 11

Oro-antral fistula, view from below. 6th Dynasty, Giza. (By courtesy of the late Dr Frank Leek).

held fast. Thou shouldst treat him afterwards with grease, honey and lint, every day until he recovers'. The linen mentioned had different names signifying different types. The type used for cleaning and packing (*ssm*) is probably smaller and softer (also used in Case 12, *v.i.* and Case 22 to clean inside the ear). The linen used for splinting (*b.d.,w*) is 'stiff rolls', post-

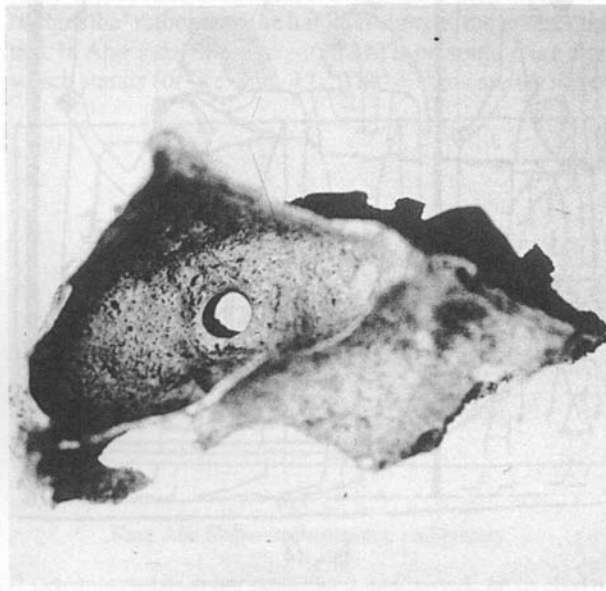


FIG. 12

Oro-antral fistula, view from above, 6th Dynasty, Giza. (By courtesy of the late Dr Frank Leek).

like in shape (used in Case 12 (*v.i.*), in Case 23 for supporting slit in the auricle of the ear and in Case 34 to support clavicle).

- (b) Case 12: 'Break in the chamber of his nose', meant fracture of nasal bones and 'findest his nose bent, while his face is disfigured, (and) the swelling which is over it is protruding'. Recommend 'thou shouldst force it to pull in, so that it is lying in its place, (and) clean out for him the interior of both his nostrils with two swabs of linen until every worm of blood which coagulates in the inside of his two nostrils comes forth. Now afterwards thou shouldst place two plugs of linen saturated with grease and put into his two nostrils. Thou shouldst place for him two stiff rolls of linen bound on'. This is the first recorded case of manipulation of fractured nasal bones.
- (c) Case 13: In this case is a fracture of nose with crepitations and with bleeding from the ear on the same side, ie fracture base of skull. The ancient writer commented that it is: an ailment not to be treated.
- (d) Case 14: Piercing wound of nostril with stitching being used (Breasted, 1930) and fresh meat was used as dressing.

Table V summarises Cases 11–14 in the Edwin Smith Papyrus.

Cases 15, 16 and 17 are injuries to the maxillary region (*v.i.*).

Examination of mummies and skulls from ancient Egypt has revealed many cases with injuries and fractures

TABLE V  
INJURY TO NOSE—EDWIN SMITH PAPYRUS

Case number	Injury	Appearance	Treatment
Case 11	Break in 'column' of nose	Simple fracture	Cleaning, nasal packing (linen), external splinting*
Case 12	Break in 'chamber' of nose	Disfigurement (displaced bone)	Manipulation of the fractured nose, cleaning, nasal packing (linen), external splinting*
Case 13	Fractured nose—fracture base of skull	Bleeding from ear, patient speechless	Ailment not to be treated
Case 14	Soft tissue only, 'piercing'† to inside of nose	Skin wound, 'fistula'	Stitching, cleaning, dressing

\*Using 'stiff linen'—see text.

†'Fistula' *ysdb*, same word used in Case 28 of wound in throat with 'fistula' to gullet (*v.i.*).

of and around the nose. Breasted (1930) presented a skull of an XIth Dynasty soldier showing an arrow lodged in the orbit (Fig. 13). Excavations in different areas showed skulls with a fractured nose (El-Batrawy, 1935), orbital margin and zygoma (Rösing, 1980), premaxilla with loss of teeth (Leek, 1986). King Seqenenre Tao (*v.i.*) sustained an injury to his nose resulting in fracture of both nasal bones, destruction of the right eye and a fracture of the supra-orbital margin, inflicted by a blunt instrument such as a stick or an axe. He also had injuries to his malar bones, besides the multiple skull fractures (Harris and Wente, 1980).

For injuries of maxillary sinus *v.i.*



FIG. 13

Skull showing an arrow in the orbit, 11th Dynasty.

<sup>34</sup> The author has seen at least one case of frontal pneumosinusitis dilatans in his clinical practice.

### XIII Frontal sinus

The frontal sinuses were compared with the 'Secret Chambers' or sanctuary of a temple, the implication is that their 'violation' would lead to the brain, hence the first ever description of the frontal sinuses (also *v.i.*) (Rowling, 1986). Cases of hypoplastic and underdeveloped frontal sinuses in mummies were described by Strouhal and Vyhnánek (1979). They also reported a male mummy with 'hyperplasy' of the frontal sinus.<sup>34</sup> An osteoma of the frontal sinus was seen by Strouhal (1984).

For injuries affecting frontal sinus *v.i.*

### XIV Sphenoid sinus

A case possibly of sphenoid sinus tumour (left side)

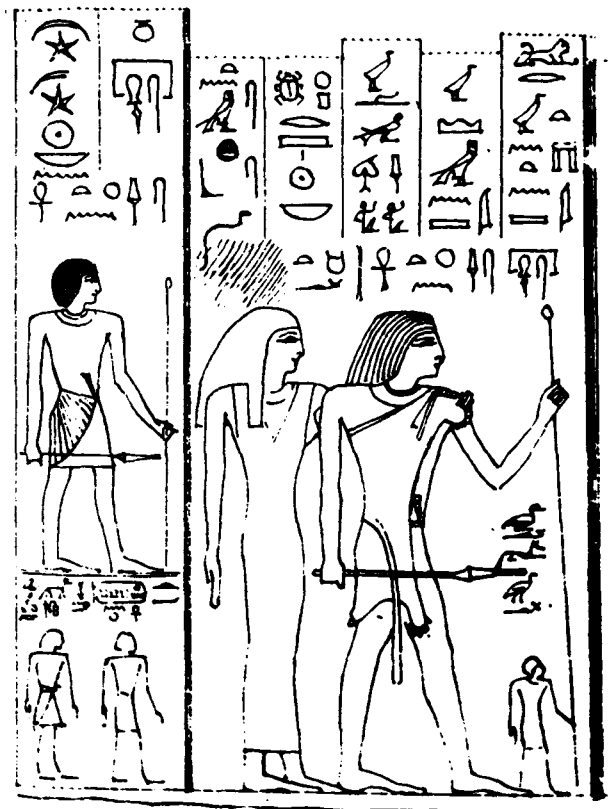


FIG. 14

Ni-Ankh Sekhmet and wife, Vth Dynasty.

<sup>35</sup> Also written: Ny-Ankh-Sekhmet but wrongly read as: Sekhem-anh, nekh-Sekhmet or Sekhet-enanch (Ghalioungui, 1983).

affecting the orbit was discovered in Nubia (El-Batrawy, 1935).

XV *Ammonia*

Ammonia which is used at times to test the sense of smell is derived from the name of the ancient Egyptian god 'Amon', as it was found next to the Temple of Amon in the Oasis of Sewah (the same temple that was visited by Alexander the Great).

XVI *The first rhinologist*

Ni-Ankh Sekhmet (Fig. 14) is generally thought to be the first rhinologist (Wright, 1902; Stevenson and Guthrie, 1949). Ni-Ankh-Sekhmet<sup>35</sup> was a physician to King Sahura, Vth Dynasty. Some authorities have a different reading of the inscriptions (Willemot, 1981).

Throat

I *Infection*

Ebers (859) reads 'If thou examinest an enlarged gland in the throat of a man which has arisen through an attack of bile (?) or matter in any limb of a man, and thou findest its top pointed and projecting like a breast (mamma) and matter running in its place', then the script proceeds to describe local treatment (104, Ebbell, 1937). This is possibly an abscess.

II *Tracheostomy*

Two slabs were discovered dating from the beginning of the first dynasty, one in Abydos concerning King Aha (Fig. 15) and the other in Saqqara, concerning King Dyer (Fig. 16). Each slab depicts a seated person directing a pointed instrument to the throat of another person who is kneeling backwards with his arms tied behind his back. Petrie, Emery and Zaki Saad believed that this denotes human sacrifice whereas Vikentiev and Hussain believe it to be a tracheostomy being performed. The latter view is more appropriate as the lancet is used as a determinative<sup>36</sup> 'to breathe' rather than the habitual signs of the nose or the sail. In Aha's slab the sign (Ankh) is present; is a sign which stands for life (Fig. 17). The signs are on top of

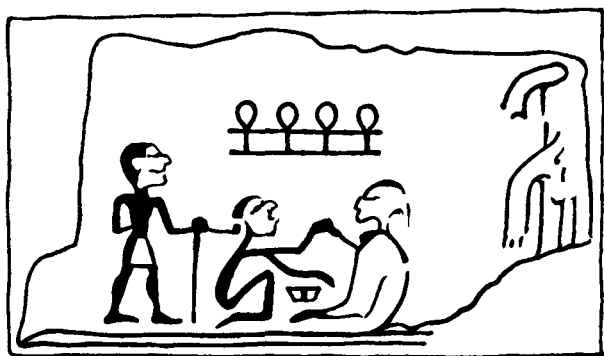


FIG. 15  
King Aha Slab—tracheostomy, 1st Dynasty.

<sup>36</sup> Determinative: is a sign attached to a word to indicate its class or feature thus serving to distinguish the word from its homographs. It played an important part in the early rules of writing (Frutiger, 1991).

the heads of both operator and patient signifying that life is given from one to the other. The way the scalpel is handled is more appropriately directed to the trachea than the neck vessels. The arms placed behind the person operated upon will be explained on similar grounds to our present day practice of placing a sandbag between the shoulder blades of patients undergoing tracheostomy. It is of note that most authorities believe that human sacrifice was not practised in Ancient Egypt. A presumed example of human sacrifice is in the Temple of Ramses VI (decapitated humans are depicted on wall reliefs), but this is more as a 'spell' for enemies (equals present day 'rhetoric' against adversaries, especially at wartime).

III *Injury*

Case 28 in the Edwin Smith Papyrus deals with a gaping wound in the throat, it reads: 'Instructions concerning a wound in his throat. If thou examinest a man having a gaping wound in his throat, piercing through to his gullet; if he drinks water he chokes (and) it comes out of the mouth of his wound; it is greatly influenced, so that he develops fever from it; thou shouldst draw together that wound with stitching'. It then continues with treatment: 'Thou shouldst bind it with fresh meat the first day. Thou shouldst treat it afterwards with grease, honey (and) lint every day until he recovers. If, however, thou findest him continuing to have fever from that wound, thou shouldst apply for him dry lint in the mouth of his wound, (and) moor (him) to his mooring stakes<sup>37</sup> until he recovers'. Fresh meat was used frequently for the daily dressing of wounds. The same was used until recently (Breasted, 1930). Lint (*ffr*), which was used for dressing, is a kind of vegetable tissue obtained from a plant. Lint is impregnated with medicaments and inserted into orifices, e.g., the ear (Ebers, 91, 7, and 92, 2), vagina and anus. In the above case it is used both with medicaments and later as a dry dressing obviously to absorb secretions and pus (Breasted, 1930).

IV *Foreign body in the throat*

In the Lyden Papyrus (Col. XIX) is an incantation and remedy for a bone stuck in the throat. It reads: '. . . You make invocation to a little oil. You put the face of the man upwards and put it (the oil) down into the mouth; and

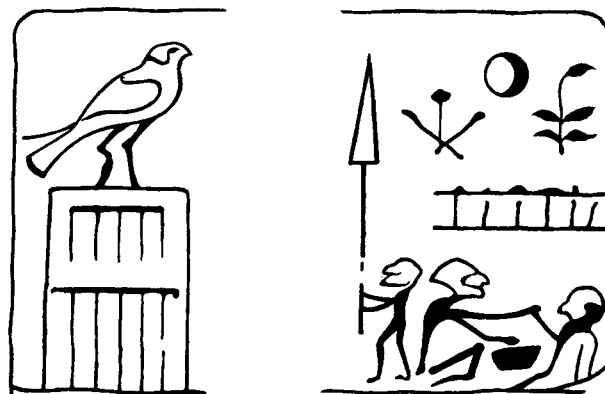


FIG. 16  
King Dyer slab—tracheostomy, 1st Dynasty.

<sup>37</sup> An archaic idiom (*v.s.*).



FIG. 17

Ankh, sign of life, presented by a God to a King.

place your finger and your nail (to the?) two muscles (?) of his throat; you make him swallow the oil and make him start up suddenly, and you eject the oil which is in his throat immediately; then the bone comes up with the oil' (Griffith and Thompson, 1974).

Also in the Lyden Papyrus (Col. XX) is another incantation to fetch a bone out of a throat: '... saying that which is in thy belly let it come to thy heart; that which is in thy heart, let it come to thy mouth; that which is in thy mouth, let it come to my hand here to-day', thus recognizing the urgency to deal with such a condition.

### **Nasopharynx**

Derry in 1909 described a case with destructive lesions involving the cribriform plate, ethmoids and sphenoids, that was thought by Elliot Smith to be malignant (Brothwell, 1967). Wells (1963) described a skull dating from III to Vth Dynasty with erosion of alveolus of left maxilla and destruction of the same side of the hard palate, pterygoid plates and posterior wall of the maxillary sinus. The vault of this skull shows multiple translucent areas. The likely diagnosis is plasmacytoma of upper respiratory tract (nasopharynx) with bony deposits in the scalp indicating a multiple myeloma change (Pahor, 1977 and 1978a). The vault deposits are typical of the multiple myeloma type. Several such cases have been reported (Pahl, 1985).

### **Base of skull**

In Nubia, a skull of a 24-year-old female showed a

destructive lesion involving the right side of frontal bone, right parietal, right greater wing of sphenoid, squamous part of right temporal bone, body of sphenoid, base of occiput and right occipital condyle and a large part of the left occipital condyle forming a wide gap continuous with the foramen magnum. It is probable that the optic nerves were involved as the left superior orbital fissure was continuous with the optic foramen, thus possibly giving rise to blindness. There was an inflammatory reaction around some of the margins of the lesion. This case had the appearance of an inflammatory process, though it could have been a very slowly growing tumour. It is difficult to imagine how the patient could have stood the progress of the condition (El-Batrawy, 1935).

This case, and others, illustrates the advanced social system in Ancient Egypt, where the sick, disadvantaged, and the handicapped were well looked after and thus were able to survive.

### **Mouth**

#### **I Gums**

Ebers (72, 553) reads: 'Another to expel eating ulcer on the gums (i.e., ulcerative stomatitis) and make the flesh grow: cow's milk, fresh dates, mama (it) remains during the night in the dew, rinse the mouth for 9 days' (72, Ebbell, 1937). Ebers (72, 551–2, 554) are prescriptions for the same condition.

#### **II Tongue**

A chapter in Ebers (85, 697–704) deals with 'illness of the tongue' and the following medicaments are prescribed: milk as a mouth wash (697), bran in a mouth wash (699), incense, cumin, yellow ochre, honey (700), acacia juice and haematite (704) (85, Ebbell, 1937). A remedy for 'purulency in the mouth' is described (27, Ebbell, 1937), this seems to be a coated tongue.

#### **III Palate**

Only one case of cleft palate is described by Elliott Smith and Warren Dawson in their book *Egyptian Mummies* (1924). The case described by Wells (1963) showed destruction of the palate by tumour, also the case of cancer of the nasopharynx described by Elliot Smith (v.s.).

#### **IV Trismus**

A possible case of tetanus (Edwin Smith Papyrus, Case 7) presents with lockjaw. Also in two cases of injuries to the face we find the description of trismus (Edwin Smith Papyrus, Cases 13 and 17).

### **Oesophagus**

A case described in the Ebers Papyrus (42, 206) could be cancer of the lower oesophagus, though it is generally believed to be cancer of the stomach (Kamal, 1967). The case reads: 'If thou examinest a man with an obstacle in his cardia, his stomach "w", and it is painful, when something enters into it (lit. entering into it is painful), and when he has eaten any food, the passing by his cardia is narrow, and he is suffering in his legs and the hip (but) not

in his thighs; if thou examinest him and thou findest that his cardia has been changed like (in) a woman who has thrown (her) foetus, and his face shrinks, then thou shalt say of him it is a phlegm obstacle. Go in to him and do not abandon him!', and it continues to describe the remedy (42, Ebbell, 1937).

In this case we notice the symptoms of dysphagia and the signs of dehydration. This seems to be first ever description of 'Hippocratic facies'.

There is also a case of injury to throat and gullet (*v.s.*).

### *Salivary Glands*

A remedy for mumps was described (Ebers 92, 778) thus: 'Remedy to expel mumps: lots of honey, the mumps were rubbed therewith, powder of juice of acacia, sawdust

of pistacie, it is bandaged therewith for 4 days' (92, Ebbell, 1932). An alternative remedy is cited (Ebers, 92, 779). These were followed by two remedies for orchitis in a man (93, Ebbell, 1937) which indicates a relationship between the two conditions as it is worth mentioning that the section dealing with male genitalia and impotence is in another part of the papyrus.

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*NB* Part I was published in the August issue and Part III will be published in the October issue. The references will appear completely at the end of Part III and reprints will be available for the complete paper.