

HEAD AND NECK DISEASES IN AN ANCIENT INDIAN SURGICAL TEXT

*(The Sushruta-samhita)**

DESCRIPTIONS of diseases and methods for their treatment can be found in the earliest available texts of the inhabitants of the Indo-gangetic plain. The oldest, the Rig-Veda, deals with non-traumatic diseases treated mainly by magical rites (Pal and Chakravorty), the later Atharva-Veda concerns itself largely with medical matters though treatment methods are still more magical than rational.

The golden age of Hindu medicine is still later in time and the Ayurveda (or Science of Life) is stated to derive from the Atharva-Veda. Of the three major postVedic texts the Sushruta-samhita deals most with surgical problems and the present discussion will be limited to material contained in the Sushruta-samhita. While the exact date of compilation of the Sushruta-samhita cannot be decided because of various reasons discussed elsewhere (Chakravorty, Jolly, Keswani, Winternitz), it is generally agreed that this was between the sixth and third century before Christ (Satyaprakash). A fresh examination of the original sanskrit text has been attempted and has been compared with various presently available recensions (Ambikadattashastri, Bhisagratna, Ghanekar, Sengupta, etc.). Most of the original text is presented here in free translation or précis, keeping the sense of the original as close as possible to modern terminology.

The Sushruta-samhita is divided into six major sections—the Sutrasthanam (Su),† Nidanasthanam (Ni), Sharasthanam (Sh), Chikitsasthanam (Ci), Kalpasthanam (Ka) and the Uttaratantram (Ut). Each section is further subdivided into chapters or Adhyayas made up of a variable number of shlokas or statements in verse or prose.

The Sutrasthanam defines the various subdivisions of Ayurveda as being eight in number. Two of these are Shalyatantra (approximately general surgery) and Shalakyatantra. The latter deals with the diseases of the parts of the body above the clavicles (Yatru), i.e., of the eyes, the ears, the nose, the oral cavity, etc. (Su/1/10). It also includes general measures in management—surgical, medical, dietetic, applications of eye drops, ear drops and medicated snuff, incantations, divination and prognostics. The general principles of surgery, operative methods, surgical instruments and post-operative care have been discussed elsewhere (Chakravorty, Satyaprakash) and will not be recapitulated. Information on the diagnosis and management of head and neck diseases is scattered throughout the entire text—the Uttaratantra concerns itself specially with these problems.

In common with other postVedic texts, the Sushruta-samhita subscribes to the Tridosha or trihumoral theory of health and disease. Derangement of one or more of these three fundamental principles is believed to cause disease and therefore diagnosis and treatment are largely dependent upon the correct interpretation of the Dosha or Doshas at fault. In diseases caused by external agents or by trauma, the response to treatment and ultimate healing is thought to be conditioned by the constitutional characteristics of the patient (Bhisagratna, Ghanekar, Seal). This often causes prob-

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† The references in parentheses refer to the relevant verse (Shloka), chapter (Adhyaya) and section (Sthanam) of the Sushruta-samhita.

lems in recognizing in modern terminology the identity of some of the conditions described.

Descriptions of the structure, the functions, the disorders and the treatment of the eyes and the cranial contents occupy large sections of the Sushruta-samhita but are outside the purview of the present paper.

The twenty-second chapter of the Uttarantram enumerates thirty-one nasal diseases. For their diagnosis a tubular nasal speculum or Nadiyantra is to be used (Su/7/13) (Chakravorty, Mukhopadhyay). Some of the disorders described can be identified, others are obscure. Nasal polypi and neoplasms can be recognized and one condition could well be post-traumatic cerebrospinal rhinorrhoea (Ut/22/10). The treatment of the various nasal diseases is almost entirely by the use of snuffs, nasal drops, inhalations and general measures. There is also a relatively well known and historically interesting section on the reconstruction of a nose damaged either accidentally or in combat or by way of punishment. For this purpose, a flap of skin shaped like a leaf and corresponding to the area to be replaced is raised from the forehead but short of total severance. This is then sutured down to the freshened edges of the stump, two pieces of the hollow stem of a plant (Eranda) being inserted to shape the external nares and to allow respiration. Details of postoperative dressings are given and the bridge connecting the donor flap to the forehead is cut only when healing is complete (Su/16/49 to 53).

The twentieth chapter of the Uttarantram deals with diseases of the ear. The detailed anatomy of the ear is not described nor is there a discussion of the mechanism of hearing except deafness being ascribed to obstruction of the channel (Srotas) carrying sound from outside into the cranial cavity (Ni/1/83). Tubular specula (Nadiyantra) are recommended both for the diagnosis and for the treatment of ear diseases—these specula have openings at both ends (Su/7/13). Twenty-eight types of ear diseases are described, some of which, e.g. infections of the pinna, otitis externa, etc., can be easily identified (Ut/20/3, 4, 5). Treatment is generally by a hygienic regimen, by specific oral medication and by the local application of powders and drops. For the extraction of foreign bodies and of impacted cerumen, a rod-shaped metallic probe, Salakayantra, or one resembling a modern forceps, Svastikayantra, is recommended (Ut/21/55, Su/7/11). Ear diseases are also discussed in the first and the twentieth chapters of the Nidanasthanam (Ni/1/83, 84, 85, Ni/20).

Earrings were in as common use in Sushruta's time as they are in modern India. The ear lobule, pierced for the insertion of the stem of an ornament, can be deformed or even divided in time by the continued pull. Besides, loss of the entire ear or a portion often occurred in combat or as a form of punishment. An entire chapter of the Sutrasthanam, the sixteenth, is devoted to the technique of piercing the ear lobule, to the reconstruction of a torn lobule, and to the replacement of partial or complete loss of ear tissue. Of the fifteen methods of reconstruction of a torn lobule (Su/16/9 to 28), ten are stated to be easy to perform and usually successful while five are technically difficult and often ineffectual (Su/16/12). As in the case of nasal reconstruction, a satisfactory ear lobule can be fashioned by the expert surgeon by taking an appropriate piece of skin from an adjacent (temple, cheek) area in such fashion that the donor skin does not completely lose its association with its bed (Su/16/16). Apart

from the infective complications of surgery of this region, a condition causing pain in the muscles of the nape of the neck with stiffness and rigidity of the neck and the head is described recalling tetanus.

The sixty-five varieties of oral diseases (Ni/16/3) can arise in seven anatomic locations—eight on the lips, fifteen on the alveolar margin, eight in connexion with the teeth, five on the tongue, nine on the palate, seventeen in the oropharynx and three in a generalized form. Only a few of these can be categorized. Amongst such are cancer of the lip and haemangioma (Ni/16/7, 10, 11), a cystic sublingual swelling raising up the tongue or ranula (Ni/16/41) and a progressive swelling and induration of the tissues of the neck and the undersurface of the tongue representing either Ludwig's angina or diffuse cancer of the base of the tongue (Ni/16/40). Of the diseases of the alveolar margins, one seems to be cancrum oris (Ni/16/20, 21) and another a carcinoma (Ni/16/22).

Treatment, as before, is largely by general medical measures though interesting operative procedures are also advised. Traumatic or congenital defects of the lips can be repaired by freshening the edges and suturing as in the case of a torn ear lobule or with a flap of adjoining skin. The method of rhinoplasty can also be used though it is unnecessary to use hollow stems for the formation of nostrils (Su/16/34). Excessive overgrowth of flesh at the dental roots (either epulis or neoplasm) should be excised (Ci/22/17) and extra teeth should be extracted (Ci/22/16). Impacted wisdom teeth are to be removed after incising the overlying gum. If there be a sinus arising from the root of a tooth, the overlying gum should be cut and the tooth extracted. Broken pieces of teeth and bone fragments have to be removed as otherwise the jaw bone becomes diseased and an opening into the outer skin results (Ci/22/23 to 26). If there be a sinus in connexion with the upper teeth or if the teeth be strongly attached, extraction may be dangerous because of severe haemorrhage or because of the spread of disease upwards to the cheek and eyes, even causing blindness (Ci/22/29, 30).

Diseases arising in the structures of the neck are mentioned in the Nidanasthanam. The following descriptions sound familiar. Small and large hard swellings arising in the neck, the arm-pits and the waist (groin) are named Apachi. They are of the same colour as the surrounding skin and of the size of small fruit stones or the spawn of fish. Some of these heal spontaneously while others burst giving rise to discharging sinuses (Ni/11/10, 11, 12). Apachi can thus be tuberculous lymphadenitis, or nodes involved by lymphoma or secondary metastases. Pyriform swellings in the front of the neck in connexion with the two main muscles (the sternomastoids) are termed Galaganda (goitre). One type is slow growing, never suppurates and has dark-coloured veins on the surface. Another is hard, whitish and itchy. Some of these cause hoarseness or difficulty in breathing. In some there is associated weight loss. The above descriptions fit in with benign and malignant affections of the thyroid. Another type of goitre results in a fetid smell and a constant rumbling can be heard in the throat—this could indicate a pharyngeal pouch, or more probably an advanced cancer of the larynx or pharynx, still amongst the most common sites of cancer in this country. Goitres which have lasted for more than a year are difficult to treat (Ni/12/23 to 30).

The above review, brief as it is, gives some idea of the sophistication of the Sushruta-samhita. Limitations of space preclude discussion of instructions for the pre-operative,

operative and post-operative management of cases, on the construction and use of surgical instruments, on bandaging and on many other aspects of surgery in general and surgery of the head and neck area in particular. It is hoped however that the present paper will stimulate interest and further examination of the empiric maturity of Hindu surgery more than fifteen centuries ago.

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TWO QUESTIONS ON HUMORAL THEORY

THE QUESTIONS are (1) What is the meaning of the interchange of 'qualities' (*dynameis*) between water and air that took place at or shortly before the time of Aristotle? (2) Are there nine or thirteen crases, according to Galen?

(1) Philistion held that the element 'air' has the quality 'cold', the element 'water' the quality 'moist'; 'fire' has 'hot', and 'earth' 'dry'.¹ Somewhat later Aristotle, who allowed two qualities to each element, assigned 'cold' and 'moist' to water, and 'moist' and 'warm' to air, fire receiving 'hot' and 'dry', and earth 'dry' and 'cold'. But Aristotle says that water is primarily 'cold', air primarily 'moist', fire primarily 'hot' and earth primarily 'dry'.² Erich Schoener has pointed out recently that Aristotle was not always consistent in this regard, at times calling air 'dry' or 'cold' and earth 'hot' or 'moist'. Schoener notes also that the Stoa, and perhaps Theophrastus and Strato continued to characterize air as 'cold', while Empedocles himself may have held it to be 'warm'.³ There seems to have been little comment on these curious ambiguities.