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EDITORIAL

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Journal of Medicine & Surgery

VOL. II

AUGUST 1959

No. V

Diet and Dermatology

By

Dr. M. NATARAJAN, M.B., Z.D.V., F.D.S.,

No. 169, Poonamallee High Rd., Madras-10.

A healthy skin covers a healthy body. Nowhere is the effect of food more manifest than in the skin. Unlike in disorders of other systems, in skin maladies, their reaction-alteration patterns can be seen. Diet is vital for our very existence. And the effects of undernutrition, malnutrition and even overnutrition are quite clearly reflected in the skin. Poets and Philosophers, Physicians and Politicians talk almost everyday if not of diet atleast of food. Dietary therapy has been in vogue for centuries. The Indian system of Medicine lays great stress on food regimen in therapy. Hippocrates recommended long ago, that fasting had a beneficial effect on healing of wounds. Perhaps the Indian custom of fasting on auspicious and religious days, being based on the same principle, has an ennobling effect on both the body and soul. Taylor states that in 392 A. D. St. Jemane treated a patient with skin disease with addition of oil in diet and the patient

recovered. Domestic remedies, Folk medicine, Nature therapy and Indigenous Practitioners have all utilized dietary regimen to a greater or lesser extent. In France, in 19th century Brocq stressed about 'regime alimentaire' in dermatoses. It would not be too much to presume that in the modern era where rapid advances are made in Medicine the value of diet therapy has been lost sight of. However it is gratifying to note that a special branch of Medicine—the Dietetics—has gained increased influence in all modern institutions.

Diet and dermatological maladies have a very close relationship. In fact, appearance of skin is a very good index for the nutritional state of the individual. We have problems of the overnourished—the obese sedentary type—the undernourished—poverty stricken and starving people—and the malnourished—the type fed on imbalanced and improper food. Diet

influences the metabolism of fat, carbohydrates, proteins, mineral and water of the skin.

Protein content of the skin is 3.5 to 4.5% according to Urbach. The principal proteins are albumen, globulin, melanin, collagen elastin and keratin. Non protein nitrogen content of the skin is given attention to now because in senile pruritus there is abnormal increase in NPN.

Carbohydrate metabolism disturbances can cause a variety of symptoms and diseases. Sugar content of skin is 58%. Abnormal increase causes recurrent furunculosis, abscesses, dermatitis, pruritus, Monilia infection etc. Increase in cholesterol content of skin constantly occurs in conditions like Acne Vulgaris, Seb. Dermatitis etc. Food, free from fat make people susceptible to infections. It is too academic to go into the details of metabolism of trace elements.

Diet can exert a strong influence directly or indirectly through the Endocrines. For example, diets low in iodine content can cause thyroid disturbance. Food can cause disorders in a number of ways, viz:

1. Spoiled food, absorbed and causing a deleterious effect.
2. Allergy to particular food.
3. Partially digested food particles due to digestive disturbance.
4. Alcohol, coffee, and tea causing disturbances.
5. Foods containing abnormal quantities of factors like iodides acting as irritants.

There are four ways of dietary approach advocated by Urbach.

1. Restricted Diet—restriction of water, sugar, cholesterol etc, in foods.
2. Alteration Diet (UMSTIUMMUNG DIET) Sudden and drastic alteration in diet serves as a stimulus and acts as an excitant for healing process.

3. Addition Diet—adding ingredients lacking in customary food.

4. Elimination Diet...eliminating of tending factors from food.

In practice various diets are employed. A brief mention of them will not be out of place.

A. *Acidifying and alkalizing diets*:— Though the basis for this classification is a controversial matter it is safer to assume that the shift in the pH in tissues is the deciding factor. The purpose of acidifying diet is to change the alkalotic state of the tissues to acidotic state to accelerate healing process. In this diet Milk, vegetables, fruits sugar etc are forbidden, while meat eggs, fish, cheese, bread, starch, tea, coffee are permitted. Alkalizing diet is useful in reducing excess acidosis of the tissues. Effects are just the reverse of acidifying diets. What is prohibited above is permitted, and what is allowed, forbidden.

B. *Dehydration diet*:—Indicated in conditions where there is tendency for fluid retention:—Dermatoses, Eczemas, Allergies, Urticaria, infections etc. It is said that infections respond very well in the absence of fluids. Dehydrated people respond quicker than patients with normal fluid intake. Fluid and salt intake is restricted. High quantity of proteins with limited fat and carbohydrate is useful.

C. *Low Sodium diet*:—The chief varieties are Milk diet and Fruit Diet. They have beneficial effect on acute inflammatory dermatoses. Moreover they are essential during prolonged steroid therapy. Acute dermatitis, Erythrodermas contact Dermatitis etc respond well. Raw food diet (raw fruits: plantain leaves, nuts, and seeds are rich in potassium and low in sodium. Suitable for cases on Steroids.

D. *Low carbohydrate diet* Recommended in the obese sedentary middle aged people.

E. *Low fat Diet* Advocated in Acne Vulgaris, Seborea, Psoriasis, lipoidoses of skin

and skin diseases connected with Liver disorders.

F. *Low Protein Diet* Recommended by Schamberg in people with too much tortuosity and dilatation of capillaries in the skin and in Psoriasis.

G. *Low potassium Diet* in Addison's Disease.

H. *Low calorie Diet* advocated for plethoric sedentary people. by Urbach.

I. *High calorie Diet* In Neuro Dermatitis Chronic dermatitis and in run down and debilitated patients.

J. *Low uric acid Diet* in Gout.

K. *High Protein Diet* advocated in cases of Hypoproteinemia.

L. *Alteration or UMSTIUMMUNG DIET* It exerts a profound and far reaching influence on diseases of the skin. Sudden alteration of the diet is the true basis. Any of the above diets can be employed. They act as a stimulant to the system and accelerate healing process.

Some of the skin disorders directly related to diet are as follows: Proteins—Hypoproteinemia—'Kwashiorkor' syndrome.

Carbohydrates—over nourished—Diabetes—tending to Moniliasis, fungus infections, Bact. infections, flexural dermatitis etc.

Fats—over nourishment — Carotinoids 'Aurantiasis cutis' Lipoidoses.

Vitamins.

Hypervitaminosis A & D

Hypovitaminosis A Phrynodema Kertoderma, Xeroderma, Kerat ophthalmia.

B Glossitis, dermatitis, stomatitis, Pigmentations etc. Pellagra, Perleche, Beri-beri

C (scurvy) Tendency for dermatosis being prolonged and chronic.

D Though skin is not directly affected the following conditions benefit with Vit. D. viz: Psoriasis, Pemphigus, Scleroderma, and Acne Vulgaris.

K Purpuras

Food Allergies By and large, the troublesome and often unpleasant alliance between diet and dermatitis is allergy. One man's food is another man's poison is too true. The common manifestations of food allergy are dermatitis (eczema) urticaria, infantile dermatitis, prurigo Purpura etc. Heredity, endocrine disorders, disorders of the Gastrointestinal system Pancreatic hypofunction, Liver disorders, infections, infestations are all said to be pre-disposing factors for food allergy. The common food offenders are Proteins of animal origin (Fish, meat, eggs etc and sea foods) plant proteins, grains like maize, soya beans, and fruits like oranges, bananas, grapes, and vegetables, cabbages, tomatoes, carrots etc

Spices condiments and alcoholic beverages can cause food allergy.

Vegetable oils, salts, carbohydrates and organic acids can cause allergy.

SUMMARY

The relationship between diet and dermatological maladies are enumerated. The various methods of diet advocated by Urbach and others are pointed out. Diseases directly caused by food factors are detailed.

Acknowledgement

Profound thanks are expressed to Dr. R. Subramaniam, B.Sc. M.D., M.R.C.P. (Lond) Professor of Medicine, Madras Medical College for his very valuable guidance and advice in the preparation of this article.

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Peeps Into The Life of Ronald Ross at Madras

By

Dr. D. V. SUBBA REDDY, M.B.B.S., M.Sc.

Director, Up-graded Department of History of Medicine, Hyderabad (Andhra.)

The enterprising editor of this new medical journal from Madras has been repeatedly requesting me to contribute an article to the journal. Therefore, I am writing this article which by its nature, is different from the other articles in the journal that deal primarily with either applied aspects of basic sciences or with medical sciences or clinical specialities.

As Professor of History of Medicine, I am expected to write on the historical aspects or Biographical aspects or literary or cultural aspects of Medicine which are deplorably lacking in our present curriculum of Medical Education and Medical training. The medical men of ancient and medieval times and even of the last century, particularly those associated with the European and American Universities, were men of wide learning and accomplishments in humanities, language as well as in other branches of Physical and natural science. They were not simple "scientists" in narrow by-lanes of medicine or expert technicians in manipulative skill. They studied the classics, poets and philosophers, cultivated a love of arts and letters and made contributions to literature and science. Since the medical man has to deal not only with instruments or test tubes or books and files, but also with human beings, very often in their movements of misfortune, ill-health and suffering, the Doctor has to imbibe and exhibit in his talk and conduct the highest human qualities, all the tact, and wisdom enshrined in the life and writ-

ings of the great physicians and philosophers of the past.

The 20th century which has discovered the significance of vitamins and recognised the clinical syndromes, due to lack of vitamins, has also recognised the need and the importance of humanities in the normal growth and proper development of a medical man and therefore proposed to make up this deficiency, in our schools and colleges, and professional training, by introducing courses of lectures on history, philosophy and sociology of medicine in the early years of medical curriculum, so that the students may get personally interested in the lives of great discoverers and physicians, in the masterpieces (of medical and non-medical subjects) of those great doctors and scientists and humanitarians who have contributed, not only to our present knowledge but also to the Physical health and mental happiness of the people, all over the world.

In the past, many of the eminent medical officers in India were writing such articles in Indian Journals. The Indian Medical Gazette and Indian Medical Record of Calcutta, Indian Journal of Venereal Diseases and Medical Bulletin of Bombay, have been publishing articles on Historical and cultural aspects of medicine.

Madras and South India, had very distinguished medical officers and medical men during the last two hundred years. If some data and information on their life and their activities and their writings can be

unearthed or collected and arranged and published in a series of articles in this journal, the new journal would have justified, not only its existence but would be making a new and rich contribution to the medical literature and medical journalism in India.

This article is not intended as a presentation of facts and materials. My purpose in sending this for publication is to interest and encourage senior students and the junior medical practitioners, to undertake, in their leisure moments further explorations, investigations and study with a view to gather further information and supply the gaps in our knowledge mentioned later in this article. I also trust that some young people will be stimulated to prepare articles on similar lines on the life and work of various medical officers and medical men of South India, for publication in the journal.

ROSS AND INDIA

Text Books on Medicine or Tropical Medicine or History of Medicine, allude to the fact that Ronald Ross was an officer of I.M.S. and that he made a discovery in India relating to Malaria. Hyderabad and Calcutta are the cities casually mentioned as the scenes of his investigations. It is not generally known that Ronald was born in India in 1857, was brought up in India, upto the age of 7, when he was sent home to England, for his education. After he joined I.M.S. in 1881, he was allotted to Madras Establishment served for nearly twenty years, in various cantonments, and Military Hospitals and journeyed to different parts of India, Andamans and Burma with Madras Regiments.

ROSS AND MADRAS

Most people in other parts of the world have probably never heard that Ross was in Madras at any time, even for a few days. But even the people residing in Madras

betray similar ignorance. A few who have heard of the name Ross in Madras, mistake him for some other Ross: Ross the Business man, or Ross the soldier, or Ross the Health Officer. Without going into details, it may be briefly stated that Ross was allotted to Madras Establishment, soon after he passed the I.M.S. examination in 1881 and continued in the Madras Establishment, he till retired from service in 1900.

On arrival in India, his first posting was to Madras City--to do duty in the Station hospital, then located in the East Wing of the present General Hospital and accommodating the sick from British Military Regiment in the Fort St. George. Later he was in Madras on different occasions and for varying periods, as Medical Officer of the different Regiments of Madras Infantry, sometimes proceeding to Muffasil stations like Vizianagaram when the Regiment was stationed there. Once he had to go to Burma on field service and on the way, spent some time in Andamans, at Port Blair.

During his stay in Madras in 1882, he was posted for sometime to do duty with regiment near Mysore. Later, he stayed in Bangalore first as Medical Officer of a regiment and on the second occasion, as a Garrison Surgeon and a third time, as Special Officer, to fight Cholera epidemic then raging there.

Ronald Ross's arrival in Madras on his first posting, his early lodgings, his intellectual pursuits and hobbies, his routine of life in Madras are briefly but graphically described in his own words in the following extracts from "Memoirs of Ronald Ross":-

First Posting: (October 1881) I went by train (three days) to Madras, and was there posted to the Station Hospital (for British troops only), as there was then no vacancy, in the Indian regiments, for the newly arrived young doctors; and in fact we found later that promotion was blocked

for us for some years by the incompetence of someone who had over-crowded the junior ranks.

Lodgings: I lived at the Dent's Garden Hotel, some distance from the Hospital, a large old house, with great lofty rooms, plastered walls, deep verandas, cool bathrooms, swarms of mosquitoes, day and night endless cawing of crows and squeaking of squirrels, all characteristic of India.

After a little time, obtained an excellent suite of rooms right at the top of the north face of the hotel, overlooking the hotel "compound" (or grounds) and the large houses and trees of Madras from a considerable height.

Servants:—Immediately on my arrival, possession had been taken of me by my servant, Apoo; who adhered to me till he died while I was on furlough about 1894, and who was a thin, good-looking man, capable and honest, except for the usual servants' perquisites, and I owe his memory considerable gratitude.

Hindi Examination: I worked all days in the cool breeze in the veranda, where, the sun seldom entered, and soon passed (9 January 1882) the necessary lower standard examination in Hindustani (which I had utterly forgotten).

Intense Study of literature: As with other young people, the change of climate to the broad sunlight and air of India, filled me at first with an extraordinary vigour and after the morning attendance at hospital, I laboured all day at various pursuits. I never needed special exercise because I often spent hours pacing up and down my veranda thinking out problems of all sorts and devising future works. Messrs. Higginbotham's book-shop provided me with literature; and I started on a thorough course of the world's poets, bought Italian, French, and German grammars and dictionaries in order to master them, and with

the help of translations, learnt at least something of Tasso, Alfieri, Racine, Hugo, Schiller and Goethe, besides trying Homer, Aeschylus and Virgil again. There was scarcely anyone in the hotel except a venerable old Armenian gentleman called Aretoom, so that I had most of the day to myself. I used to wake before dawn and leap out of bed and look from my lofty veranda at the morning stars in an extreme exaltation of spirit; there, they flashed and flashed, before the sloped sword of the zodiacal light smote them and the dawn dispelled them. Then, the city also awoke, the wayfarer trilled his song in the road, the strains of the military bands at early parade floated in the air; and then, alas, the sun and the crows came also. That was my watch tower in the East mentioned in the first verses which I wrote in India. I lived really in solitude but it was a time of integration of thoughts and experiences, spent with the high gods themselves."

In the early part of 1882 Ross was posted in Medical Charge of 10th Infantry which was in camp near Mysore Railway terminus to the west of Bangalore. After a few weeks, he returned to Madras from Bangalore. In March, 1882, he was appointed to be in acting Medical Charge of 17th Madras Infantry then stationed at Vizianagaram. It was in 1882 and 1883, that he finalised and printed some of the poems:— "So far as I remember the first drafts of both these poems were completed in Madras, early in 1882, but were laid by, when I went for a few months to Vizianagaram."

"I returned to Madras and to my old quarters there in September 1882, and resumed duty at the Station Hospital, there being no permanent vacancy for me as medical officer of a native regiment (by which I lost Rs. 100 a month). It was about then that what I call my great calamity occurred. One day, I commenced to read an old prize book which I had won at

Springhill School for mathematics in 1871, called "The Orbs of Heaven", by O.M. Mitchell (Routledge), which eloquently described the great mathematical triumphs of the astronomers and I was so fired by the theme that I determined then and there to study mathematics. I bought nearly all Todhunters series at Higginbothams book-shop, and, literally, went through them in a few weeks, upto the end of the Calculus of Variations, though I had not advanced beyond Quadratic Equations at School. I can scarcely describe my enthusiasm. Of course the positions had to be consolidated later with greater labour; but it was remarkable with what ease the mind of the youth of twenty-five mastered matter which that of the boy found so difficult even when taught by practised masters, and the fact is that education must be chiefly self-education, during or after school, or it will never approach completion at all.

"When I returned (from Vizianagaram) I revised them, and as I then became much engrossed in mathematics, I determined to print them the poems in order to get them off the mind but always with a view to amending them greatly some day which will probably never arrive. They were printed, at my cost, by M/s. Higginbotham & Co. 164 Mount Road, Madras. in 1883. I believe that no one ever bought a copy, and I never saw a review. I still have a few copies the residue having been "wasted".

"Then also I decided to print my "Edgar" and "The Judgement of Tithonus". In this, I was largely guided by looking through a copy of Baile's Festus, which someone lent me which is something like "Edgar" and which seemed to have been spoilt (I have never read the book properly) by a lifetime's tinkering. But before this was done, I already had another mathematical fit and was too impatient to correct a number of gross flaws, such as the poor

opening of "Edgar". Higginbothams suggested that they might try to sell some-copies, but I never heard whether they did so. I then sent a copy to my father in England, threw the remainder into a box and lost all interest in the work. "Urania" carried me off, and the other Muses were completely forgotten for the time."

"Among smaller matters which interested me in moments of relaxation at Vizianagaram and Madras was shorthand writing of which I devised several systems. This led me to consider phonetic spelling, which I then began to employ for my verses, in order to study English rhythm and euphony For the next five years, all my thoughts and leisure were given to various mathematical studies, with lucid intervals of rest devoted to studies in verse, prose, and music. But I gradually saw more of the outer world, and engaged in pleasant sports."

Routine of his life in Madras: "Later in 1883, I was obliged to leave my "watch-tower in the east" at Dent's Gardens Hotel and to occupy Government quarters in Fort St. George. Madras is built upon an absolutely flat coast cut away by the sea in a straight line running north and south. A dull, stagnant stream of ditch called the Comb enters, or rather does not enter, the sea at one point, and here the old fort, surrounded with a high wall and moat, is built, and contains barracks for a British regiment, offices for the military staff, mess etc. My new quarters were in the middle of the fort, and were not nearly so pleasant as my former rooms, heat, mosquitoes and the incessant noise of drilling, of children squalling, of servants quarrelling, of crows and kites, etc. to which I added the strains of a piano which I now bought as a solace. The Station Hospital was situated some little distance outside the fort, and there I went every morning at 7. a.m. for the most ordinary medical work on slight cases las-

ting an hour or two. My friend McKee (who had coached me for the M.R.C.S. and was a thin and aquiline as before) also had quarters in the fort, and we messed together and not at the regimental mess. In the evening, we hired a brougham visited the hospital if necessary, and then drove along the fashion-crowded beach, listened to the band or strolled away farther to watch the moon or stars rising in the east before dinner, and catch what cool air we could. On one occasion, I got what McKee said was Cholera but what might have been toxin poisoning."

"This life lasted, I think nearly a year, during which we continued to lose Rs. 100 a month owing to the fact that there were no vacancies for us as medical officers of Indian regiments, not our fault, and an example of the usual unsatisfactory administration, which had obtained our services on very exaggerated prospectuses. But lost in my numerous visions, I was quite indifferent to such a small matter, and found my pay quite sufficient. We had, of course called on the Governor and chief officials, and knew a few ladies but we did not trouble about society, and as we played no games and (unlike most of the wholesome young men in Madras) did not even ride, society did not trouble about us. What men I knew seemed to take interest in absolutely nothing, and I have forgotten everyone except one or two pawky doctors who studied chiefly the Madras Army Lists for chances of advancement—vide my sonnet in "Philosophies" Even McKee took no interest in any of my numerous projects and experiments, dived my mathematics, and ridiculed all poetry of course."

By the end of 1883, Ross was beginning to feel the strain of severe work and also suffering the effects of depression of spirit and unwholesome life. In August, 1884; he was sent from Madras to be in temporary

Medical charge of Pensioners' dispensary at Pallavaram, a little South of Madras.

In 1885, he was sent on a military expedition to Burma and accompanied 9th Madras Infantry to Port Blair in Andamans. Early in 1887, he returned from Burma to Madras with the same regiment. For some time, his residence was in "Black Town" (George Town). He entered into the social life of Madras and joined Madras Club, Polo Club, Hunting Club, and Racing Club. In the summer of 1887, he was in charge of the 3rd Madras Infantry and had his residence shifted to a Bungalow in Royapettah, near Rice fields. During this period of his stay in Madras, he also became interested in "angling" and in studying Chemistry in Government laboratory, in the Presidency College. His health began to fail and he had also to face personal and family troubles, due to the death of his father.

By the middle of 1888, Ross felt dejected and wrote most depressing poems under the title "Exile". About the end of June, he left Madras on furlough and one of his copassengers on the ship was Dr. Sibthorpe who was then a Professor of the Madras Medical College and a surgeon of the General Hospital and who later became Surgeon-General of Madras. His clinical manual was the "Medical Bible" for students of the Madras Medical College at that period.

Madras may also claim to have contributed towards the great discovery of Ross by providing the necessary background facilities and encouragement in the early days of his interest in Mosquitoes and malaria. It was while he was on short leave in the Nilgiris Hills to recoup his health, that Ross first became interested in the various types of mosquitoes and started catching them and examining them. This study of mosquitoes was subsequently carried on at Bangalore also. While it was Manson who inspired Ross to start and

continue work on Mosquitos as a transmitter of malaria, the Medical Officers in Madras lent him considerable help and support. Lt. Col. W.G. King, the Sanitary Commissioner of Madras, after whom the King Institute of Preventive Medicine Madras, is now named and for whom Ross had great regard, was one of the staunch supporters of Ross, when the controversy was raging fiercely.

It was before the South Indian Branch of British Medical Association that Ross presented most of his communications on musquittoes and malaria parasite. This branch was started in 1884, under S. G. Cornish with 58 members. By 1895, when S. G. Sibthorpe was President, it had over a hundred members, had published five volumes of transactions, many of which contain valuable professional contributions. As many as 7 of the new members were local graduates and Dr. C. B. Rama Rao, Asst. Professor of Medicine & Physiology was elected as one of the Honorary Secretaries. The Branch was the most active one in India and the oldest of the existing ones, after the disappearance of the older one. Ross's smashing reply to Lt. Col. Lawrie's address at Bombay, was read before this Branch. This was followed by short paper by Capt. A.E. Grant, Professor of Hygiene in Madras Medical College, who fully supported the views and opinions of Ross.

Even in his other articles, Ross refers to his experience in Madras or in Madras Regiments. In Indian Medical Gazette, February & March 1896 (p.42 & 86) Ross, in an article on "Some practical points respecting the malarial parasite" records that out of 112 fresh cases of fever in the 19th Madras Infantry, stationed at Begumpet in Secunderabad in August 1895, he found parasite in 69 cases (61.60%) even with a hasty examination.

To illustrate the short time given for the

examination of smears, Ross mentions that two of the Medical Officers of Madras (Capt. Car White and Robertson) watched him during these blood examinations and noted that he took only 100 to 110 seconds to find parasite in the smear.

Ross also quotes the findings of Col. Sturmers, then Officiating Superintendent of Lying-in Hospital, Egmore. In outpatient cases of fever, out of 41 examined, 19 cases showed parasites in the smear. All were of quartan variety. Ross compares the result of blood examination at Madras, Bangalore and Hyderabad and conjectures that different varieties of parasite may be found to be prevailing at different localities.

Dr. James Smith, sometime professor of Pathology, Madras Medical College, examined the slides sent by Ross and confirmed his findings. Col. Maitland, Principal, Madras Medical College, was a close collaborator of Manson and must have encouraged Ross. Donovan was a new entrant into service and must have felt thrilled to read and hear Ross fighting for Medical Science.

Ross left his family in Madras, during his duty at different places and looked on Madras as his "home"

It was before the South Indian Branch of the British Medical Association at Madras that he presented his papers and gave his demonstrations on the progress of his researches in Malaria. Throughout the controversy with Col. Lawrie, Madras provided a forum for the expression of the theories, facts and clarifications that ultimately established the soundness and truth of Ross's findings and conclusions. It is, therefore, fitting that Madras, the citizens and Doctors, should continue to treasure the association of Ross with Madras and honour his memory by trying to collect and publish more information, more pictures, more letters of Ross, during his stay at Madras.

Retinal Detachment and its Modern Treatment

Thorough clinical vitreous examination by ophthalmoscopy and by slit-lamp microscopy is essential in all cases of retinal detachment. With the ophthalmoscope various opacities are seen, including parts of the destroyed vitreous framework, various deposits (pigment, cells, blood), discrete opacities in the detached hyaloid membrane, and eventually opacities in the subhyaloid space. Complete differentiation and exact localisation of all kinds of opacities is not possible with the ophthalmoscope alone.

Slit-lamp microscopy starts, as mentioned above, with the examination of the anterior vitreous body. The anterior hyaloid membrane cannot be separated optically from the posterior lens capsule in normal eyes. Anterior vitreous detachment, namely separation of the anterior hyaloid membrane from the lens, occurs only exceptionally. In aphakic eyes is the anterior hyaloid membrane well visible, provided that it is not destroyed. Immediately behind the lens remnants of the anterior part of the "primary vitreous" are seen, separated from the "secondary vitreous" by the "membrana hyaloidea plicata".

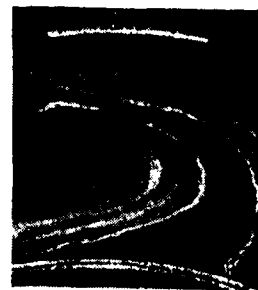


Fig. 36.

This membranous condensation of vitreous structure forms originally the upper wall of the primary vitreous or "tractus hyaloideus", axially located in embryonic and early postnatal life. Subsequently the topographic situation changes, since the tractus is bowing down, and eventually the upper wall of the tractus forms a wavy retrolental membrane with an oblique course (Fig 31). The primary vitreous appears optically empty, or it contains physiological remnants of the hyaloid artery, often being attached to the anterior hyaloid membrane, usually to the

The Vitreous Body in Retinal Detachment

posterior pole of the lens (Mittendorf's dot). The secondary vitreous consists of a series of lamellae of framework tissue ranging behind the plicated membrane.

This framework tissue shows various changes in cases of retinal detachment. Even in normal eyes the vitreous structures get gradually destroyed with increasing age, particularly in myopic eyes, and liquefaction takes place, starting in the centre. Little vitreous structure, with great mobility of rests of framework tissue, means advanced liquefaction of the vitreous body, as seen in high myopia, senility, in cases of intraocular foreign bodies, or following long standing uveitis. In the majority of cases of retinal detachment fibrillary degeneration of the framework tissue can be seen. Pigment deposits are especially found in cases of long standing detachment. Intravitreal haemorrhage causes invasion

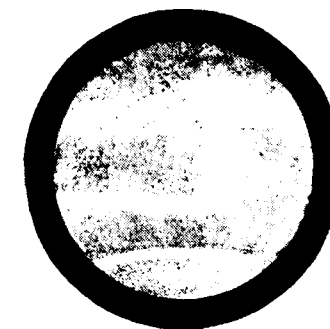


Fig. 32.

of the framework tissue with yellowish points, or clotted dark blood may be visible. Clouding of the vitreous fluid is seen in cases of inflammatory reaction (uncured retinal detachment, hypotony), or following severe intraocular haemorrhage into the vitreous cavity. After perforating injuries various transformations of the vitreous framework, and strand-like condensations can be seen, often converging towards the site of the perforation.

Proceeding to the deep vitreous practically in all cases of retinal detachment any kind of posterior vitreous detachment can be seen with the biomicroscope. In the majority of cases of idiopathic retinal detachment it is a posterior vitre-

- (c) Fibrous tissue which fills the wound-space on healing has got a power of shrinking and which in turn pulls the adjacent teeth towards the gap so caused by a dislocated, extracted or fallen off tooth.
- (d) Teeth which have lost their support from one side are liable to bend or turn at their free ends towards the point of least resistance and more so when there is a constant friction over these unsupported teeth by the teeth of the opposite jaw during mastication.

Suggestions :—1. Preservation of the dislocated tooth at the time of making a medico-legal examination is necessary as its presence is quite sufficient a proof of its dislocation and no other proofs will be needed.

2. Routine dental examination as regards to the number of teeth present, con-

dition of gums and teeth, nature of injury to the affected sockets corresponding gums and lips and making a note of them in the injury report is also essential as these data will help in clearing the position of the case during the course of discussions made in the court.

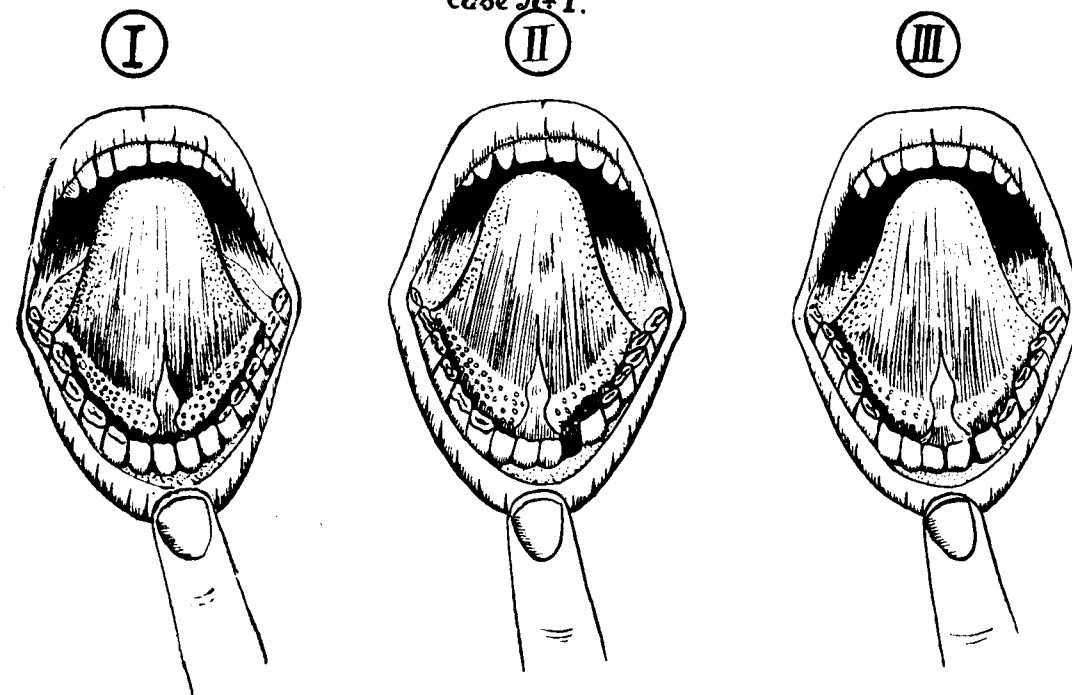
Summary :—A discussion on migration of teeth with three case reports has been presented with possible suggestion in medico-legal practice.

ACKNOWLEDGEMENTS

I am very grateful to Dr. C. P. Tandon P. M. S. I, Inspector General of Prisons Uttar Pradesh and Major S. K. Suri Ex-I.M.S. Superintendent Central Prison Fatehgarh for their kind permission to use the jail records and its publication in Medical Journal. I also owe my thanks to Dr. J. K. Sircar for his help.

INTERPRETATION OF DIAGRAMS OF

Case No 1.



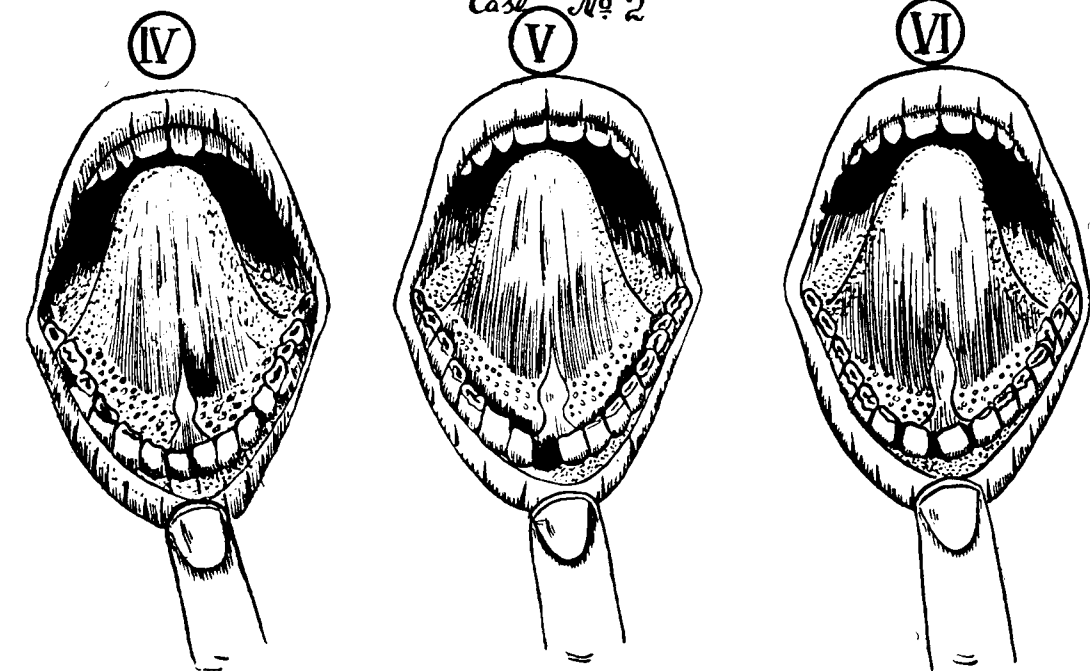
Showing Presence of all teeth in lower jaw

Showing absence of left lower lateral Incision

Showing filling up of the gap (II) by adjacent teeth

INTERPRETATION OF DIAGRAMS OF

Case No 2

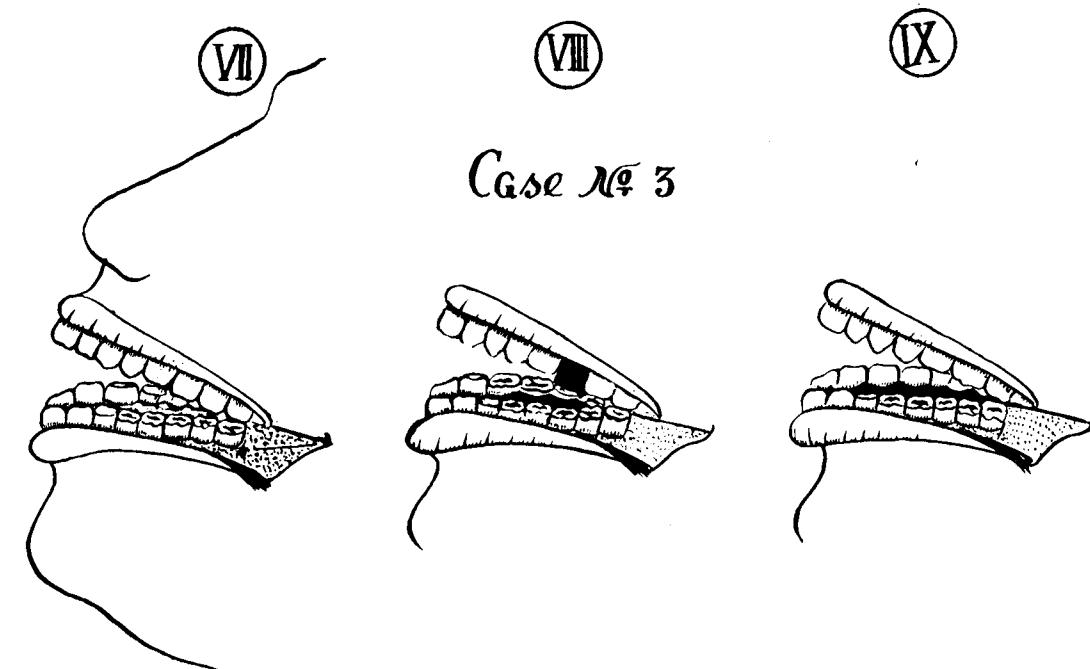


Showing presence of all teeth in lower jaw

Showing absence of right lower central incision

Showing filling up of the gap (V) by adjacent teeth

Case No 3



Showing presence of all teeth (8) on the left side of upper jaw

Showing absence of upper first molar teeth

Showing filling up of the gap (VIII) by adjacent second molar

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Very truly Yours,
DR. B. RAMA RAU, B.Sc., M.B.B.S.
Editor

BOOK SECTION-I

(Contd.)

PLASTIC SURGERY

FOR

MEDICAL STUDENTS

AND

DOCTORS

BY

Dr. R. J. MANEKSHA, F.R.C.S. (Eng.)
SPECIALIST IN PLASTIC SURGERY

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Burns

have healed up. Deep burns could be skin grafted at this time of the first dressing if patient's general condition permits.

Deep burns of the hand are treated by pressure dressings—the hand is maintained in position of function.

What is the exposure method of treatment? What are its advantages and disadvantages?

Many "burn centres" recommend the exposure of severe burns to open air to reduce the amount of local infection that may take place under warm, macerating occlusive dressings.

The main indications for use of exposure method are :

(1) In mass catastrophe where a large number of burns cases are to be treated at the same time—this will avoid the need for nursing, less dressing material is used, and all the burns could be easily inspected.

(2) In burns of the face, genitals and superficial burns of hands.

(3) When either the front or back of chest and abdomen is burnt. It is not possible in circumferential burns of chest and abdomen unless there are facilities for the use of supportive frames.

When should exposure treatment be given up in favour for the closed method?

When it is found that there is pus formation underneath the crust and this leads to septicaemia then the crust is removed and the area cleansed and antibiotic impregnated gauze is applied.

What is temporary biologic dressing?

Skin homografts and human amniotic membrane are often effective as temporary biologic dressings. They remain

viable for three weeks and very often helps to tide over the critical period. This method is useful in a badly burnt child when no donor skin is available.

When should autografts be applied?

Autogenous skin grafts should be used for deep burns at the earliest opportunity. Burns area that has not healed up by the second or third week requires autografts.

BURNS OF THE FACE

How does a Person get burns of the face?

Deep burns of the face and neck is a tragedy of greatest magnitude in a man's life. It may be thermal burns or acid burns. Burns due to strong acid purposely thrown or directly applied whilst the person is asleep causes a very severe degree of burns,—those due to fire and where patient has got a chance to protect his face with his hands the burns of the injury is on the dorsum of hands—the central part of the face escaping.

How does a face burn heal up?

Burns involving the dermis and deeper if allowed to heal by itself does so by granulation, the ultimate result is a healed scar. A scar is always smaller than the area it has replaced—hence when a scar is excised to the normal tissue the area is often more than twice the size of the scar. Due to pull on the surrounding tissue ectropion of the eyelids, lips, rolling up of alar margins are common deformities in a burns case.

What is the effect of deep burns of the neck?

In burns of the neck—the chin is pulled towards the chest and vertical folds of scar tissue stand out prominently, the chin line is obliterated. In a child, the mandible fails to develop anteriorly, mucosa of lower lip stands out prominently in eversion.

What is the result of eyelid burns?

Closure of the eyes is impossible in the severe ectropion—eyeball remains exposed and is prone to infection and injury and may ultimately be lost by corneal ulceration. In severe burns the eyelids are totally burnt and eyeball is also lost by burns involvement of the cornea and sclera. Epicanthal folds of scar tissue form. With eversion of puncta epiphora is common.

What is the effect of burnt eyebrows?

Eyebrows when present do not attract attention but when absent are marked noticeably as an important landmark of the face being absent, patients are very keen on reconstruction of the eyebrows once they have seen others treated with good result.

Area ears very susceptible to burns of the face?

Yes, destruction of the ears is not uncommon with burns—cartilage of the ear is a delicate structure easily exposed, and very prone to infection when it shrivels up and becomes a mere vestige of its former self.

Is the healed scar of a different colour than normal skin?

Healed sear tissue is often depigmented and stands out in marked contrast to the dark skin. It should be excised and skin graft applied if function is hindered. This is marked in dark skinned patients.

Do keloids form on the face?

Yes, keloid formation in the scars is very common in burns scars—severe itching and burning in them is often complained of.

What is the result of burns of scalp?

Destruction of scalp may also occur if exposed at the time of burning. Skull bones are thus exposed.

What is the ultimate result of severe burns of the face ?

The generally pulled appearance of the face stuck to the chest wall, the everted lips and eyelids, restriction of all movements of the face, the eyes, and the mouth give a hideous appearance to the patient.

*Treatment :—*The prevention of burns is a nationwide problem. It is the duty of the state to educate the masses with proper precautions to avoid burns. Accidental burns whilst cooking on a gas stove has lead to innumerable fatalities in each town of India. Keeping the stove on the ground whilst cooking invites the sari to catch fire. Stoves should be kept on a platform or table. Saries should be worn in such a manner that no ends are liable to come in contact with the flame. Very often the sari catches fire from behind and before the person is aware it is completely on fire—severe and generally fatal burns are thus encountered. Nylon burns very quickly. Burns in children are common during the Divali season ; Children should be taught the proper way of handling crackers. Dangerous crackers should be prohibited by the government. More burns occur in Divali season in children than in the whole year. Burns of the hand is common in children because of their inherent tendency to touch and feel every object—burns of the palms and fingers leads to crippling contractures and useless hands—with loss of manpower.

What is the early treatment of a burnt face ?

The ideal early dressing of deep burns is a skin graft. The depth of the burns could be decided during the second or third week of burns and acutually superficial burns heal up during this period. The ideal preliminary dressing depends upon the individual surgeon but the exposed method (open air) of burns is gaining favour. The burnt area should

Burns

be as aseptic as possible—granulations are scraped and haemostasis obtained by warm moist sponges and a split skin graft applied and immobilized by suturing the margins, pressure dressing is maintained for a week and then graft kept open. This is the early treatment of the burnt area. Split skin graft has a tendency to contract and hence not the best answer, later on it can be excised and replaced with appropriate tissue as dealt with in the individual parts of the face.

What is the final reconstruction of the face ?

Final reconstruction of burnt face should start when all scars have lost their angry and red appearance, become soft on palpation as well as retain the same colour on pressure over there. Skin loss must be replaced in such a way that tissues are replaced in their normal position and function normally. Full thickness or pediclegraft skin should replace the burnt scar. Split skin may be retained if the function of the part is provided.

In what order are the different parts of the face treated?

The eyes require first attention. Then the centre of the face and neck and lastly the side of the face.

CHAPTER XI

Defects of the Urine Bladder and the Genitals

★ ★ ★

(A) OPEN BLADDER (EXTROPHY OF BLADDER)

What is the condition of open bladder?

The urinary bladder is situated near the lower part of the abdomen just underneath the skin and muscle. In some rare cases this part of the skin and muscle fails to develop and the urinary bladder can be seen on the surface. The two openings from the kidneys through its ducts (ureter) are seen on the bladder area—through this opening the urine constantly leaks out.

Does a child born with this defect live?

Yes. There is no immediate danger to life. But as the child develops, the bladder catches infection which then spreads to the kidneys and may give rise to trouble.

What is the usual span of life of such people?

Even if untreated, people live to adulthood and may or may not die from kidney infection.

What is the main trouble with these persons?

Due to the constant leakage of urine, life is very miserable due to the constant soaking of the clothes. In the male the genital is not developed (epispadias).

What can be done for such cases?

If the bladder opening is small, it can be closed by bringing the surrounding muscle and stitched together. But

Defects of the Urinary Bladder and the Genitals

of the opening is wide, the whole bladder is transferred to the intestinal tract so that the urine passes along the rectum together with the stool.

With this operation does the urine have a chance of leaking through the rectum?

No.

(B) HYPOSPADIUS

What is hypospadias?

The male genital organ (penis) is made up of three glandular structures. Two running at the side and one at the lower part. Through the latter travels the urinary canal (urethra) which ultimately opens at the tip of the penis. In hypospadias the urethra instead of opening at the end opens somewhere inbetween.

What are the types of hypospadias?

Scrotal : When the opening is very far backwards.

Penile : When the opening is in the middle and third.

Glandular : When the opening is near the tip but not at the tip.

What is the cause of this defect?

During development of the foetus the lower part of the urethra fails to develop and thus give rise to the opening remaining somewhere inbetween. The penis is also bent downwards in this defect (chordee).

What is the main trouble with such cases?

As the infant grows up and starts walking about, it is noticed by the parents that the urine drops downwards and soils the child's clothes. There is an absence of the normal forceful stream of urine. During erection the penis is also bent thus making introitus impossible, in an adult patient.

Plastic Surgery for Medical Students & Doctors

What is the treatment of such cases?

The treatment aims at correcting the downward bend in the first stage, making a tube in the second operation and joining the artificial tube with the normal tube in the third operation.

At what age should this operation be undertaken?

The first operation is generally started after eighteen months and the complete cure should be attempted before the age of four years i.e., before the child goes to school.

Why should this operation be completed before the child goes to school?

Since the child passes the urine downwards, instead of forwards, he is likely to suffer from a psychic trauma when he realises that he is abnormal from the other boys. This may have effect on his mental development. Thus it is advisable that his operation be completed before he goes to school.

Under what anaesthesia is this operation done?

General anaesthesia.

Is it a major or a minor operation?

The second operation is a major operation.

At what intervals are the operations done?

At intervals of three to six months each.

Is the urine side tracked during this operation?

Yes. It is side tracked by opening the bladder from above or putting a tube into the bladder from below. This avoids infection of the operated part.

When can the person pass urine normally?

On the tenth day after the completion of the last operation.

Defects of the Urinary Bladder and the Genitals

Does the newly constructed tube grow with the child?

Yes. As the child grows the tube also develops till maturity.

Is there any difficulty in marital life later on?

No. There is no difficulty.

Can that person have children?

Yes.

What is the percentage of success in this operation?

Majority of the cases are successful. In some cases a small opening (fistula) may require closing with an extra operation.

(C) Epispadias. (Epi means above). What is epispadias?

Epispadias is the opposite defect of hypospadias. Here the roof of the urinary canal is not formed, and this condition is generally found with an open bladder (extrophy of the bladder).

What does the patient suffer from?

In epispadias the patient has no control over the urine which constantly dribbles and spoils the clothes.

What is the treatment?

Since epispadias occurs with an open bladder, the treatment of both is the same. When it occurs alone a similar series of operations like hypospadias is carried out to restore the urinary canal.

(D) Absence of the vagina. What is the cause of an absent vagina?

The vagina develops as a tube from the skin and when this fails there is absence of vagina.

Are the other parts normal?

Usually there is a very small uterus, or it may be absent.

Plastic Surgery for Medical Students & Doctors

What are the symptoms?

There are no symptoms in young age but when the child reaches puberty, there is absence of the normal menstrual period and then the mother generally notices this abnormality.

What is the treatment?

An artificial tunnel is made by the surgeon and the walls are grafted with skin over a glass mould. The skin graft generally takes in a week's time but the mould is kept inside for three to six months so that the part does not become narrow.

Are marital relations possible?

Yes. But child birth is doubtful because the uterus is very rudimentary.

Is there any psychic trauma when the girl learns about her condition?

Yes, naturally.

How many days does the patient have to remain in the hospital?

One week's stay is required.

Is it a minor or a major operation?

It is a major operation.

When can the patient be permitted to get out of bed?

After one week.

Under what anaesthesia is the operation done?

General anaesthesia.

BOOK SECTION - 2

(Contd.)

Retinal Detachment
AND
Its Modern Treatment

BY

Dr. J. M. PAHWA

M.B., B.S. (Pb) D.O., Z.O. (Vienna) M.S. (Lucknow)
Senior Ophthalmic Surgeon, Eye Hospital, Sitapur.

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CHAPTER V

The Vitreous Body in Retinal Detachment

by

Dr. HRUBY, M.D., University-eye clinic GRAY (Austria.)

★ ★ ★

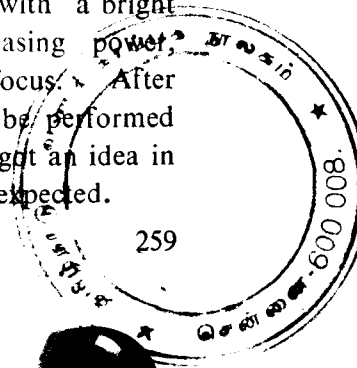
The vitreous body plays an important role in the pathogenesis and course of retinal detachment. In many instances the manifestation of retinal separation means an affection of both, the retina and the vitreous. Also in the treatment of retinal detachment the condition of the vitreous body must not be neglected; surgery of the retina includes vitreous surgery.

1. Technique of clinical examination of the vitreous body

For clinical examination of the vitreous body a well dilated pupil is essential. There are two ways of examining the vitreous clinically, by *ophthalmoscopy* and by *slit-lamp examination*. The former is done in *diffuse illumination*, the latter in the *optical section*, usually in the sagittal section. Slit-lamp examination is superior to ophthalmoscopy by clearer analysis of structural details, easier detection of membranes, and more exact establishment of topographic relations. Nevertheless, biomicroscopy of the vitreous body should always be preceded by transillumination with a bright ophthalmoscope, using plus lenses of decreasing power, until finally the eyeground is brought into focus. After thorough ophthalmoscopy biomicroscopy can be performed much more purposeful, since we have already got an idea in which areas productive biomicroscopy can be expected.

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Retinal Detachment and its Modern Treatment

Transillumination of the vitreous cavity with an ophthalmoscope reveals various kinds of "vitreous opacities", their size and shape, their approximate location, their mobility, and, if possible, their relation to the adjacent anatomical formations, particularly to the (detached) retina. Ophthalmoscopic vitreous examination includes the axial portion as well as the periphery of the vitreous cavity.

This first step of clinical vitreous examination is followed by *Slit-lamp microscopy of the anterior vitreous body*, preferably in bright focal illumination, and with a not too narrow beam. The relation of the vitreous body to the lens or to the anterior hyaloid membrane (in aphakic eyes), the aspect of the visible framework tissue, the quality of the vitreous fluid, the presence of deposits, and the vitreous mobility should be considered.

The final step of clinical vitreous exploration is *biomicroscopy of the deep vitreous and fundus* by means of a contact lens (GOLDMANN), or with a HRUBY-lens, set coaxially and near to the patient's eye. A small angle between the optical axis of illumination and observation axis is required, easily obtainable with modern slit-lamp models (Haag-Streit, Carl Zeiss etc.). Observation in bright focal illumination is the most profitable way of deep vitreous biomicroscopy; examination in the reflected light gives additional findings. The axial portion of the deep vitreous and fundus is well accessible. With the HRUBY-lens also the upper and lower periphery can be seen at a certain extent, if the patient is looking up and down respectively; at the same time the prismatic deviation of the peripheral part of the lens can be profitably utilized. When the lateral periphery of the fundus is being examined, the patient looks in the corresponding direction, the coupled slit-lamp system is turned slightly to the opposite side, and the minus lens is

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set near in front of the patient's eye, in coordination with the oblique optical axis of observation. All movements of the patient's eye can be controlled by means of a fixation lamp, attached to modern slit-lamp models. Examination of extreme peripheral areas can be achieved with GOLDMANN'S contact lens with three mirrors: the upper and lower fundus periphery is easily visible in the inverse image, but examination of the temporal or nasal periphery cannot be performed without having placed the patient horizontally.

Biomicroscopy of the deep vitreous is rendered more difficult than common slit-lamp examination of the anterior eye, by the poor optical density of most of the structures in this area, by the diffuse red light reflected from the eyeground, the small angle of incidence, and by the restricted field of vision. The structure of a normal deep vitreous and fine deposits appear en bloc only; large isolated opacities look grey-whitish in direct illumination, but almost black in reflected light. A detached posterior hyaloid membrane can be well visualized if it is not too delicate, and pathological changes can be exactly localized either into the framework tissue, or at the hyaloid membrane, or into the subvitreal space.

Binocular examination is always superior to monocular observation, but in cases of narrow pupil or high myopia no stereoscopic image is obtainable. Approach of the HRUBY-lens to the patient's eye increases the field and improves stereoscopic accessibility of the eyeground, except in hypermetropia; there some increase of the glass distance is useful to stereoscopy, but at the cost of the field.

II. The role of the vitreous body in the pathogenesis of retinal detachment.

According to our present knowledge primary (idiopathic and "traumatic") retinal detachment is regularly connected with a *posterior vitreous detachment*, namely a more or less

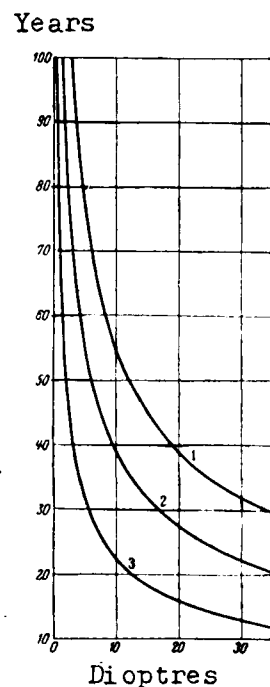


fig. 19

ions are senility, inflammatory reactions of the anterior and posterior uvea, contusions, perforating injuries and intraocular operations haemorrhages into the vitreous cavity, and cases of retinitis proliferans or tapeto-retinal degeneration.

The diagnosis of a posterior vitreous detachment can be made by transillumination of the vitreous cavity with an ophthalmoscope, provided that opacities in the detached posterior hyaloid membrane are present. These

extended separation of the posterior hyaloid membrane from the disc and the retina in the area behind the ora serrata, together with a more or less marked retraction of the vitreous gel, or with a vitreous collapse. Thus the vitreous cavity is divided into two parts: one that is filled with the retracted vitreous body, and the other, the retrovitreal or subhyaloid space, containing nothing but the retrovitreal fluid.

Posterior detachment of the vitreous body is a *rather common* condition. In *axial myopia* the onset of a posterior detachment of the vitreous can be predicted by the degree of the myopia and the age of the patient, according to RIEGER (Fig. 19). Other favourable condi-



fig. 20

multiform *discrete opacities* are the cardinal ophthalmoscopic symptom of a posterior vitreous detachment. They are made up of preformed glial tissue originating from the surface of the optic disc or from other parts of the eyeground, e.g. areas of inactive choroiditis, and remaining in connection with the posterior hyaloid membrane. The most impressive of these discrete opacities are the prepapillary ring-shaped, often fenestrated opacities. In addition, there are numerous kinds of various opacities in the prepapillary area, but not infrequently also somewhere else in the vitreous cavity (Fig. 20). The posterior hyaloid membrane itself is only exceptionally directly visible with the ophthalmoscope.

Biomicroscopical diagnosis of posterior vitreous detachment is based upon the visibility of the detached *posterior hyaloid membrane* in focal illumination. The membrane

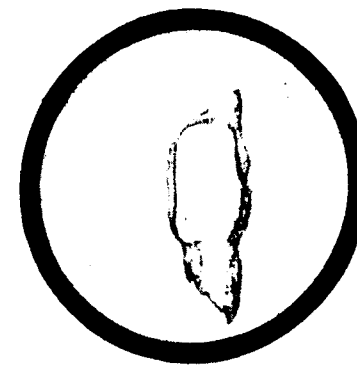


Fig. 21. Ring Shaped opacity in the posterior memberane of detached vitreous (Pre-papillary ring-).

separates the frame work tissue of the retracted vitreous from the optically empty retrovitreal space. The optical density of the posterior hyaloid membrane varies individually and locally, and the membrane cannot be seen in every case and in full extent with identical distinctness. But, with discrete opacities already found ophthalmoscopically a posterior detachment of the vitreous can be taken for granted with certainty. The discrete opacities help us to find the site of the detached posterior hyaloid membrane. With the hyaloid membrane recognized in a certain area, its course and the shape of the vitreous detachment can usually be found easily.

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There are two main groups of posterior vitreous detachment, namely, the more common *complete vitreous detachment*, extending everywhere near up to the ora serrata, and rarer types of *partial detachment*, subsequently often merging in a complete vitreous separation. In the first group we meet with the two most frequent types of posterior vitreous detachment, namely, the *simple detachment*, and the *detachment with collapse*; besides the *funnelshaped* vitreous detachment and the *irregular shapes* which are less common.

In cases of *simple vitreous detachment* (Fig. 8) there is a complete separation of the posterior hyaloid membrane behind the ora serrata, together with a more or less marked regular retraction of the vitreous gel, thus forming a spherical segment of various height; however, in some cases, such a *massive vitreous retraction* occurs, that merely a thin layer of

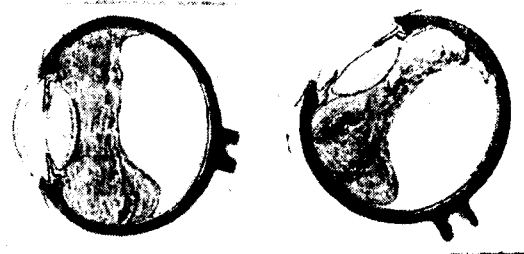


Fig. 22.

vitreous tissue remains behind the lens, the posterior hyaloid membrane being frontally stretched out. The vitreous framework shows generally little destruction, the posterior hyaloid membrane often contains discrete opacities. The simple type of complete vitreous detachment is preferably encountered in younger people, and in non-myopes. Massive vitreous retraction may follow inflammation, intraocular haemorrhage, and perforation of the eyeball, including eye surgery.

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Posterior vitreous detachment with collapse (Fig. 8) occurs preferably in old individuals and in myopic eyes with advanced fibrillary and lacunary destruction of the vitreous framework tissue. The detached posterior hyaloid membrane becomes visible near behind the lens as a nearly perpendicular wavy membrane, turning backward in the axial area, and coming forward again near the bottom of the eyeground towards the lower part of the ora serrata. The collapsed vitreous is apparently suspended in the retrovitreal fluid, because of the similar specific gravity of both constituents. Discrete prepapillary glial opacities in the back membrane are very common, preferably fenestrated ring-shaped floaters (Fig. 21).

There is no space to discuss the *theories on the origin of posterior vitreous detachment* in detail. The simple type seems to develop gradually by *syneresis* of the vitreous gel, namely by separation of fluid from the framework tissue with transportation into the subhyaloid space. The collapsed type, on the contrary, seems to rise suddenly by *dislocation of vitreous fluid* from a large central cavity, due to lacunary destruction of the framework, into the subhyaloid space (GOLDMANN).

The *funnelshaped vitreous detachment*, considered fairly common by former authors, is rare. It represents an almost complete detachment of the vitreous, associated with a circumscribed connection of the back membrane with the optic disc, or another area of the fundus, e.g. scars following inflammation or injury, retinitis proliferans etc.; this connexion being unusually tight prevents detachment of the vitreous body in this particular area.

Irregular types of posterior detachment occur particularly following vitreous loss during cataract surgery or after perforating injuries.

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Among the types of *partial detachment of the vitreous body* a circumscribed posterior, superior, lateral, inferior, and irregular detachment can be distinguished, all of them being of low frequency and of little importance in the pathogenesis of retinal detachment.

The form of posterior vitreous detachment which plays the most active role in the pathogenesis of idiopathic retinal detachment is that of *complete posterior vitreous detachment with collapse*. The simple type is of minor importance, the upper vitreous detachment is a definitive rarity. Irregular vitreous detachment and massive vitreous retraction is important in many cases of secondary retinal separation following perforation of the eyeball with eventual intraocular haemorrhage or vitreous loss.

Posterior vitreous detachment with collapse is a very common event in myopia and in senility. Among all types of posterior vitreous detachment the collapsed vitreous shows greatest mobility. It is obvious, that this type of detached vitreous exerts the most pulling action upon the retina, especially at vitreo-retinal adhesions in the upper half. The mode of pulling action coming into question is called "*vitreous shock*" (LINDNER), namely, inertia of the detached vitreous body causes jerk-like traction at the retina following sudden eye movement. The same mechanism elicits the well known "lightening streaks" in the patients' peripheral field, particularly temporally, according to the less extended pars caeca retinae in the nasal periphery of the eyeground. Vitreous shock may be followed by precipitation of true retinal tears (Fig. 22). Thus idiopathic retinal detachment is often preceded by symptoms of posterior detachment.

The question, under which particular conditions a retinal tear may occur, was already discussed by many

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authors. We know, that a collapsed vitreous body alone does not mean absolutely an imminent retinal tear. According to FAVRE and GOLDMANN there are different types of insertion of a collapsed vitreous body at the upper peripheral retina, as can be seen with GOLDMANN'S

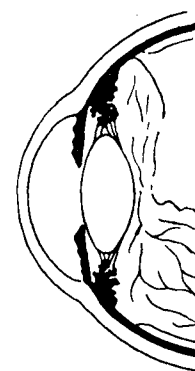


Fig. 23.

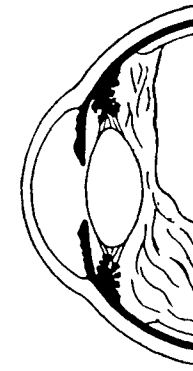


Fig. 24.

contact lens with 3 mirrors. In the one type the posterior hyaloid membrane runs forward to the ora serrata, and the very peripheral adhesion cannot be seen, except in cases with an iris coloboma (Fig. 23). This type of upper insertion of the collapsed vitreous body does not seem to be serious with regard to the origin of a retinal tear. In the other type the adhesion of the posterior hyaloid membrane is more back, and well accessible to biomicroscopy; since there the posterior hyaloid membrane is hanging down perpendicularly, the pulling action of the collapsed vitreous body upon the retina may be strong enough to cause retinal tears (Fig. 24). Moreover, the insertion of the collapsed vitreous may change from one type to the other one in the same individual, thus forming an irregular adhesion; in addition, in both types sometimes isolated synechiae can be seen, or broad bands, connecting the back membrane of the detached vitreous with the retina behind.

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LINDNER has already assumed, that *irregular adhesions* of the detached vitreous body at the superior retinal periphery, particularly isolated vitreo-retinal synechiae or broad

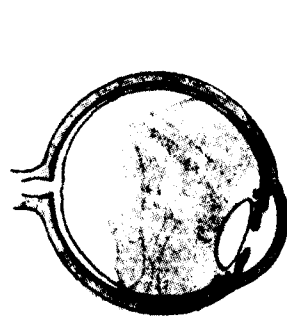


Fig. 25.

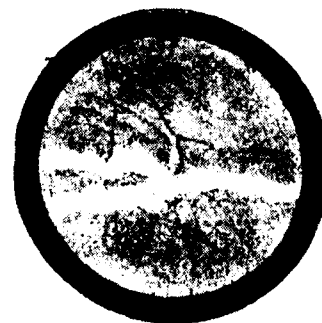


Fig. 26.

bands behind the general line of insertion, may concentrate force of vitreous shocks at circumscribed areas of the retina, thus causing tears, all the more, if the retina itself is affected by atrophy and degeneration (Fig. 25).

Actually at the site of vitreo-retinal adhesions the retina and choroid may clinically look normal, or there are signs of degeneration, atrophy or inactive inflammation, and even a sharp retinal ridge may become visible. Additional adhesions seem to exist along retinal blood vessels (Fig. 26), and in the area of muscle insertions. Therefore retinal vessels often are seen crossing over retinal tears, and tear formation often coincides with haemorrhage into the subhyaloid space, or into the vitreous framework, due to laceration of blood vessels. The favoured location of retinal tears at the insertion of the superior oblique muscle is another well known fact.

Retinal tears caused by vitreous shock are in the majority horseshoe-shaped, the flap pointing towards the posterior pole, and being fixed to the detached vitreous (Fig. 27). This connections seems to be a quite firm one, since there are not only broad attachments to the posterior

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hyaloid membrane, but also fibrillary condensations within the vitreous body, connecting the flap of the tear with the

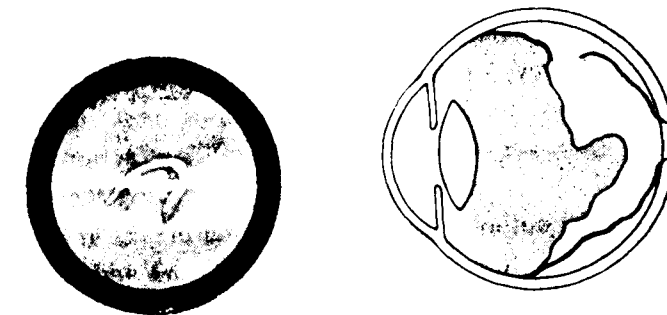


Fig. 27.

framework tissue. In a minority of cases an operculum is completely torn out and attached to the posterior hyaloid membrane (Fig. 28).

Without doubt not all primary retinal breaks can be led back to the pulling action of the detached vitreous body. There are cases enough, in which no connection can be

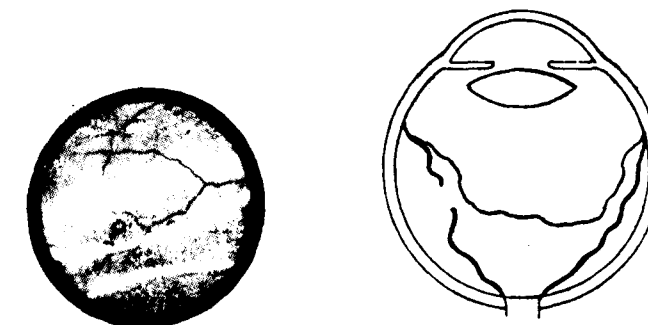


Fig. 28.

proved between the detached vitreous and the broken retinal area. In general these retinal holes are round and not too big (Fig. 29). They must be attributed exclusively to primary retinal atrophy and degeneration according to the conception of A. VOGT.

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Thus in the majority of cases of idiopathic retinal detachment with detectable breaks one can distinguish between primary retinal tears, predominantly due to vitreous shock, and primary holes, exclusively caused by retinal atrophy. However, there are cases in which a clear decision is hardly possible, and "borderline" cases may occur, in which both, retinal degeneration and pulling action of the vitreous collaborate about equally in producing the retinal defect. In the authors opinion also retinal breaks at the ora serrata can be distinguished into true oral tears and degenerative disinsertions. In the first group there is an adhesion between the detached hyaloid membrane and the peripheral flap of the tear, often no more accessible to biomicroscopy; these tears are large, they occur preferably in myopic eyes,

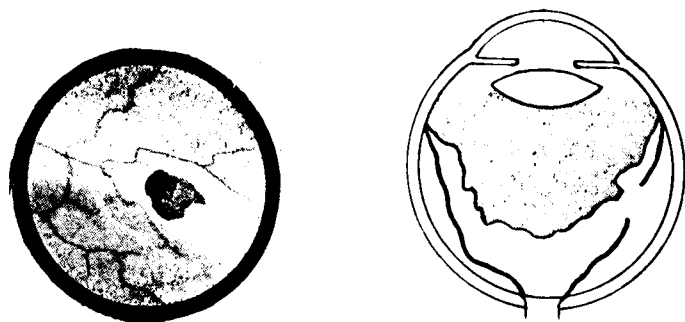


Fig. 29.

and give poor prognosis, since the detached retina may get inverted. Disinsertions, on the contrary, are smaller, sometimes divided into several sections by bridging retina, and the detached hyaloid membrane is connected with the posterior edge of the break; generally there is no myopia, and prognosis is good.

The authors own examinations of about 230 eyes showed a ratio of 3 tears to 2 holes. Both kinds of defects differ in topography according to the causative mechanism

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(Fig. 30). The pulling action of the vitreous body is more effective in the upper half of the fundus because of gravity. Cystoid retinal degeneration is likely to occur in areas of the

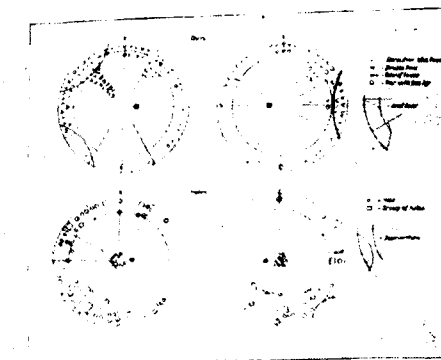


Fig. 30

poorest blood supply, namely, in the temporal periphery and in the macular region. Both components, retinal degeneration and the pulling action of the vitreous body, are additive in the upper temporal quadrant, which shows the most frequent

incidence of retinal tears. The upper nasal and the lower temporal quadrant follow; the lower nasal quadrant rarely shows retinal tears. Degenerative holes of the retina are mostly found in the lower temporal quadrant and in the macular region. Oral tears and disinsertions follow that scheme.

In cases of true traumatic retinal detachment following contusion of the eyeball the retinal breaks seem to originate from post-traumatic retinal degeneration, and so they do not show connexions with the detached vitreous body.

Perforation of the eyeball is likewise followed by posterior Vitreous detachment. Involvement or loss of vitreous is very serious, more so if the vitreous is solid as it is apt to undergo transformation and shrinkage, thus grave retinal complications may follow usually in young individuals.

Destroyed vitreous structure is never restored, it may get transformed, destructed and liquefied, and the subretinal space shows frequently invasion of connective tissue with

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shrinking tendency. Such proliferations are particularly favoured by haemorrhage. Moreover we find irregular shapes of posterior vitreous detachment, massive vitreous retraction, vitreoretinal adhesions, strand-like transformation of vitreous framework, and strands of connective tissue between the detached hyaloid membrane and the retina at the site of the perforation, or at the site of an intraocular foreign body. Secondary retinal detachment may be caused by direct retinal perforation, or by retinal breaks due to post-traumatic degeneration, and eventually by shrinking processes at the retina and in the vitreous cavity. Similar conditions are encountered in cases of secondary retinal detachment due to retinitis proliferans, following Eales' disease, diabetic retinopathy etc.

Regarding retinal detachment in *aphakic eyes* two groups should be distinguished, varying in pathogenesis and prognosis. The one group concerns cases without preceding vitreous complications, and they resemble in some respect common cases of idiopathic retinal detachment in senility and myopia, though there also massive vitreous retraction may occur. In the other group we meet with cases following vitreous loss or vitreous lesions due to cataract surgery, or section of an after cataract. These cases resemble clinically and prognostically to a secondary retinal detachment following perforating injury. Irregular vitreous detachment, preferably a kind of funnel-shaped detachment with the apex at the site of the previous cataract section, massive vitreous retraction, and shrinking strands occur, causing retinal tears with quickly advancing retinal detachment and poor prognosis. It is not so much the mechanical effect brought about by reduction of the vitreous volume which decides the course of the case, but rather more the inflammatory reaction more does it lead to deleterious vitreous retraction.

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III. The vitreous body in the diagnosis of retinal detachment.

According to our concept on the role of the vitreous body in the development of idiopathic retinal detachment, in the majority of cases an antecedent vitreous detachment can be expected. Actually the history of many cases confirms this assumption. As already mentioned, the onset of posterior vitreous detachment is often accompanied by photopsia, namely lightening streaks, particularly in the temporal periphery of the patient's visual field, according to the less extended pars caeca retinae in the nasal periphery of the eyeground. At the same time the patient may get alarmed by entoptically visible vitreous opacities in the detached posterior hyaloid membrane. These opacities are clearly visible with the ophthalmoscope (Fig. 20), the detached posterior hyaloid membrane can be visualized with the biomicroscope. Exceptionally, small haemorrhages are seen near the optic disc. Later the lightening streaks disappear, if the vitreous detachment proceeds up to the extreme periphery, where pulling at the pars caeca retinae does not produce light sensations. However, vitreous adhesions in that degenerated peripheral area may cause retinal tears. Tearing of the retina is often connected with a more or less extensive haemorrhage into the vitreous cavity, thus causing new vitreous opacities, different from that which the patient had noticed before. Therefore all patients with the history of posterior vitreous detachment and recently noticed additional vitreous opacities should be carefully examined for retinal tears. Sometimes the free operculum of a retinal tear is seen as a floating vitreous opacity, leading to the detection of the break behind and more peripherally in the eyeground. Finally, in all cases of obscure haemorrhage into the vitreous cavity a recently formed retinal tear should be taken into consideration.