

Ayurvedic Inheritance of India
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Module - 1
Evolution of Ayurveda

Lecture - 3
Period of Systematization

We began this journey of Ayurveda from the Vedic stage, where you saw the beginnings of Ayurveda, concepts, some practices. Then, there is a long phase of Indian history when Buddhism was dominant in India, and how the practice of medicine had changed radically from the time of Vedas, in the Buddhist period. There was a very big change in the practice of medicine, but how a thread of continuity remained during these many, many centuries. But we have very little by way of documents, regarding the practice of medicine in the Buddhist period. We have to go by incidental references to medicine in Buddhist text, which are essentially religious texts.

So, you would not expect to find any details about the human body, about diseases, about treatment. You would not expect that in the religious text or a scripture of Buddhism. Nevertheless, we have been able to get a fair amount of interesting material. What we have today, the practice of medicine essentially, dates back to the first century, when Charaka is believed to have lived in North India, somewhere in the Kashmir-Punjab area. That is where his doctrines, his texts, is still an authoritative text; still used in Ayurvedic colleges; translated into all languages; translated into Persian. So, it is an extensive ((coverage)) all over the world, Charaka Samhita. But Charaka says, I am only redacting a text called Agnivesha tantra which existed earlier, obviously during the Buddhist period.

Many centuries it had been a popular text, but that is no longer available to us. It existed, there is no doubt, because Charaka Samhita, the most authoritative commentary was written by Chakrapani in the eleventh century. Without reading Chakrapani's Ayurveda Deepika, it is difficult to understand Charaka Samhita; and Chakrapani often says, he is quoting from Agnivesh tantra; he had access to that. So, that text did exist, but we have no longer any information on that.

Similarly, the Susruta Samhita, the second most authoritative text; the redaction was done by Nagarjuna; we are not very sure of the identity of this Nagarjuna, whether he was the alchemist, whether he was madhyamika philosopher Nagarjuna, or was it the third Nagarjuna, we are not very sure; but that was in the fourth century, after Charaka redacted. Now, he was redacting an earlier book of Susruta; that is also not available. So, we have lot of difficulty, understanding really, the practice of medicine during those thousand years of Buddhism. It is quite possible, someday, if we have the luck, the National Manuscripts Mission, they have claimed to have five million Indian manuscripts; two million have been catalogued, they have been put on the web, this is what I am told.

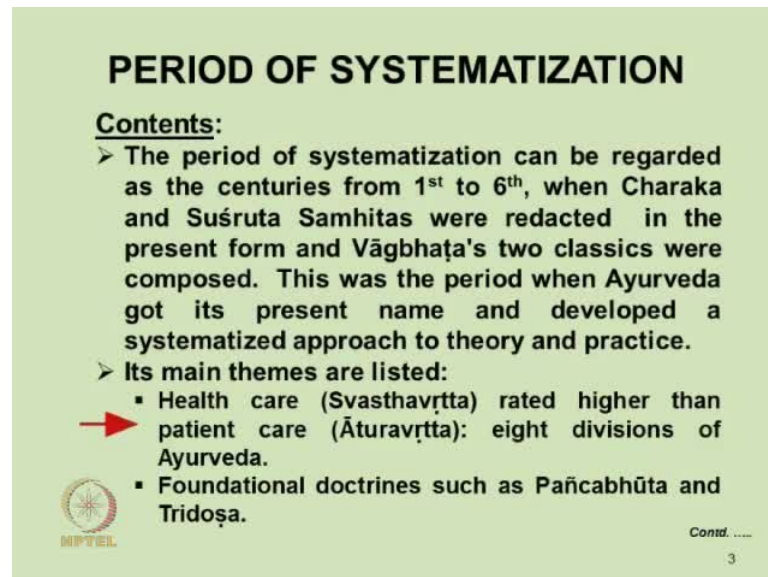
And, it is quite likely someday, somebody will discover some of these texts in that vast collection; may not be in Sanskrit; it could be in a translation into some language like Orissa. I am surprised, more than two hundred thousand manuscripts in Odia. You may find in, one of these suddenly, Agnivesh tantra, which would give us a very different view about the practice of medicine during those, that particular, almost thousand years. So, we start with the Charaka Samhita, first century, and then, what Charaka wrote, subsequently all that has been redacted, written, somehow there can all be traced to Charaka Samhita; that is the foundational text of Ayurvedha.

So, that is what we will be doing today; from the 1st century, then, the redaction of Susruta Samhita in the fourth century, and sixth century, Vagbhata, who was a native of Sindh, he wrote a very highly poetic, wonderful book called Astanga hrdaya; and he writes there, people have become so busy; they have no time to understand what Charaka and Susruta wrote. This problem we face today also. Charaka and Susruta, they are very businesslike, like a modern textbook of medicine. They, when they begin, they do not start with an invocation; they straight away start, we will discuss the science of long life; that is how they begin; whereas, Vagbhata, he wrote a highly poetic version.

Neither too long, nor too short; he cut out a whole lot of philosophy, so that for the practicing doctor, or the students of Ayurveda, he made it a lot easier; that was in the sixth century. So, this period is essentially, what I would like to call systematization of Ayurveda which has survived ever since, this is the whole point. In some way, it is like, we are going to explore a large area, a country; we have to have a feel back to have some understanding of the places that we will be visiting; of the routes we will be taking and

so on. We should have general idea; that is what I will be doing today. So, much of many things which I say today, they will be repeated later on. Suppose, we deal with the particular place in today's review, that place will be seen in detail later on; there is a certain amount of repetition, but that repetition is essential for good understanding.


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PERIOD OF SYSTEMATIZATION

Contents:

- The period of systematization can be regarded as the centuries from 1st to 6th, when Charaka and Suśruta Samhitas were redacted in the present form and Vāgbhaṭa's two classics were composed. This was the period when Ayurveda got its present name and developed a systematized approach to theory and practice.
- Its main themes are listed:
 - ➔ Health care (Svasthavṛtta) rated higher than patient care (Āturavṛtta): eight divisions of Ayurveda.
 - Foundational doctrines such as Pañcabhūta and Tridoṣa.

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Now, here the contents of this, as I already indicated, this first to the sixth centuries, that is the period that we will be covering today and the main themes of this systematization of Ayurveda, one is health care and patient care. They are two different things; health care is svasthavṛtta, which is given preeminence in Ayurveda, and patient care, āturavṛtta, which is secondary. This is incidentally very similar to Greek medicine, western medicine. Asclepius was the king, was the God. He had two daughters Hygeia and Panacea. And, Hygeia was the elder daughter, very much like health care, prevention, good nutrition, preventing disease; she was the elder daughter, Hygeia. And, Panacea was the younger daughter, that is, when you are sick, if you got into trouble, then you have to have treatment; so by giving medication, that is Panacea. But over the course of centuries, Panacea has become dominant.

Nobody wants to take hygiene today. You go to a medical college and ask option of medical students, you will hardly find anybody who wanted to take hygiene, community medicine; it is least popular. Everybody wants internal medicine; this is a reversal. In some way, here also in Ayurveda, you find svasthavṛtta is the healthcare, how to protect

your health, how to keep yourself out of trouble and aturavrutta is how to get out of trouble, which is much more difficult. These are the two areas and Ayurveda gave priority to svasthavrtta.

The second is the foundational doctrines pancabhuta, tridosha; we will deal with these later in greater detail. And, the foundational doctrines, I call them like that, because practice of medicine, there will be changes, the formulations that you give, various other procedures that you do, the standard operating practice, all this will keep changing. It may change from one place to the other. What is done in Kerala maybe different from what is being done in Bengal in Ayurveda; procedures, but the foundational doctrines, they do not change; only the super structure will change; like pancabhuta, which we will be reviewing that, it does not change at all, it remains the same.

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PERIOD OF SYSTEMATIZATION

Contents:

- Food and Drinks
- Human Body: structure and functions
- Diseases: classification, causation, diagnosis, prognosis.
- Treatment of diseases by medical procedures and formulations.
- Treatment by Surgical procedures
- Training to be a physician; surgical training

➤ Though historical events shook the practice of Ayurveda over many centuries, the “basic structure” shown above has endured.

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Then, food and drinks which is almost as important as medications, because this was one way they could intervene in the events in the body, how they could manipulate it; they use food and drinks almost as effectively as medications. So, pathya, that whole concept in Ayurveda is food and drinks. A great deal of attention was paid to that. Then, human body, structure and functions; there is nothing like, we call anatomy; immediately we think of the modern anatomy, skeletal system, muscle system, etcetera; that is not the way Ayurveda looked at it.

So, I have given, I did not want to use this one to one correlation; trying to use anatomy, physiology; that is not really the way in Ayurveda; they looked at the body. So, it is better to look at it, the body in health and body in disease; that is the way I have covered those subjects. Essentially, they will deal with what we understand as anatomy, what we understand as physiology, with all its limitations. Then, we go to diseases, classification of diseases, causation, diagnosis, prognosis; all these were dealt with according to Ayurvedic understanding.


Then, treatment; once you have made a diagnosis, you have to treat and medical procedures are used and also, formulations. Then, treatment by surgical procedures; and lastly, the training of physicians and surgeons. These are the, this pattern, or this kind of an arrangement of medical subjects, this was all crystallized during these six centuries, from Charaka to Vagbhata and they have remained more or less constant.

If you go to Ayurveda being taught by an Ayurvedic physician in Maharashtra, go to Bengal, or go to Banaras, or go Tamil Nadu or Kerala, you will find this basic pattern, that remains. Lots of changes will be there, when it comes to the procedures, the formulations that you use. All that, there will be changes, but all these will be present in Ayurveda. This is these, what I mean by systematization, that makes understanding much easier.

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**PERIOD OF SYSTEMATIZATION:
ASSOCIATED WITH CHARAKA,
SUŚRUTA AND VĀGBHAṬA**

- Knowledge relating to health and disease, and treatment of diseases during the Vedic (1500 BC – 500 BC) and the early Buddhist (500 BC – 100 AD) periods is accessible only through incidental references in the Vedas and sacred texts of Buddhism. The term Ayurveda is found nowhere.
- Medical texts known after Agniveśa, Bhela, Hārīta etc., did exist during the early Buddhist phase but they are not available in complete or authentic versions.

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Now this, I already mentioned, Charaka, Susruta and Vagbhata, these are known as Brihat Trayi, the great three of Ayurveda. And, 1500 to 500 BC and early Buddhist period is, I have already mentioned that, there are great limitations in the knowledge that we have about that period, and Agnivesa, Bhela, these are all authorities, we know they existed. Bhela Samhita, for example; Bhela was a contemporary of Agnivesa. There is a book named after him, but that is incomplete. There is a lot of controversy whether it is really Bhela Samhita. So, we have great problem identifying any text which really existed at that time. So, the knowledge is kind of incomplete, not very reliable.

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**PERIOD OF SYSTEMATIZATION:
ASSOCIATED WITH CHARAKA,
SUŚRUTA AND VĀGBHAṬA**

- Therefore the picture of ancient Indian medicine prior to Charaka (1st century AD) is amorphous, incomplete and steeped in uncertainties
- Ayurveda as known and practised today dates back to Charaka who probably lived in the 1st century AD. The systematization of Ayurveda was a gradual and collective effort spread over centuries, from 1st to 6th and associated with Charaka, Suśruta and Vāgbhaṭa.



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And, Charaka's time is first century; we can be reasonably certain about what happened subsequently.

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CHARAKA, SUŚRUTA AND VĀGBHAṬA

- Chronology of the “Great Three” of Ayurveda enmeshed in controversy.
- Charaka lived in 2nd century BC or 1st century AD according to different authorities. The view that he lived in 1st century and was a member – physician of Emperor Kaniṣka’s court along with Aśvaghoṣa is popular.

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Now, when we come to the chronology of these three, Charaka, Susruta and Vagbhata, Charaka is believed to have lived in the first century according to most authorities. There are also some who believe that he lived in the second century BC. That is not as popular today. Most people tend to agree that he was a contemporary of Kaniska, the Kushana empire which was flourishing at that time. And he, there is a Chinese text whether it was translated from Sanskrit we do not know, (()) was the one who discovered this. There, he talks about in that book, Kaniska the great king, he was himself an extraordinary person. He was the great empire going onto a, almost at the central Asia, the whole of North India, Afghanistan, etcetera. Now, that great empire of which Kaniska was the king, and he was a Shaivite by faith; but there are lot of difficulties in this, because there are people who claim he was a Zoroastrian, because he had coins issued in his time. And, there are people who claim he was a Buddhist. So, he was a person who encouraged all these faiths; and he had two companions with him. One was Ashvaghosha, the very great poet who wrote Buddha Charitha; was a Brahmin, converted to Buddhism, became an ardent devotee of Buddha and wrote this great classic Buddha Charitha; and the other was Charaka, a physician.

So, they were the constant companions of King Kaniska. So, very nice, sometimes when you read Charaka, you will find the same thing, whether he was, was he a Buddhist, or was he a Sanathini Brahmin; all these, we are not really sure; we cannot make out


because he was equally reverential, very much like Kaniska was. So, that is about Charaka.

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CHARAKA, SUŚRUTA AND VĀGBHAṬA

- Suśruta Samhita was redacted by Nāgārjuna in the 4th century; the period of the original author – Vṛddha Suśruta is uncertain. The three references to Suśruta in Aṣṭādhyāyī of Pāṇini; and absence of reference in Suśruta to skull trephining done by Jīvaka in Buddha's period, would suggest that Suśruta lived a few centuries prior to the Buddha.
- Vāgbhaṭa, a native of Sind, lived in the 6th century. Whether the same Vāgbhaṭa wrote Aṣṭāṅgahṛdaya and Aṣṭāṅgasamgraha is uncertain.

The period from Charaka to Vāgbhaṭa witnessed the systematization of Ayurveda, which, in Charaka's words, was eternal.



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And coming to Susruta, that is even more controversial. Susruta is associated with Banaras; that everybody agrees. Banaras was the Dhanvantari, the surgical school of Ayurveda was in Banaras; there is no argument about it. But about the time Susruta lived, we all, the book that we have, Susruta Samhita was edited, or redacted by alchemist, or Buddhist philosopher, we are not very sure what he was, Nagarjuna, in the fourth century that much is known, because he himself writes there.

But that original Susruta Samhita, or Susruta Tanthra, which existed much earlier, we are not very sure that Vṛddha Susruta, that is the term they used, the old Susruta. We do not know his identity, when he lived. But certainly, there are some very interesting indications. Panini who is the Astadhyayi, the great grammarian of India, Panini, almost everybody agrees, he lived around fourth century BC; and in Panini's Astadhyayi, in giving illustrations, there are three references to Susruta (()) So, he is giving an example; but obviously Susruta's name was so well known in Panini's time.

So, he must have lived certainly before Panini. There are three references to that; that is very important. And second thing is, in Susruta book that we have, there is no reference to trephining of the skull. He describes a large number of operations, including plastic surgery of the nose and so on; but there is no reference to trephining of the skull. But

Jeevaka, who was Buddha's physician and Jeevaka's, one of his great achievements was doing this trephining. In fact, in Banaras, a merchant was severely afflicted with headache and there was no cure. He was given only seven days to live by his physicians. And Jeevaka was there at that time, and they approached him, and king Bimbisara's permission had to be obtained, because he was the royal physician.

So, they got the permission of Bimbisara that, this royal physician may attend on this merchant. He went and looked at him. He said he needs an operation; he did the trephining of the skull and he is said to have removed two worms. This is what the Jataka description reveals that The whole point is, the trephining of the skull, which was done by Jeevaka in Buddha's time, that did not exist, because Susruta does not talk about it. So, it must have been earlier. So, Susruta lived prior to Buddha; that will explain how Panini is referring to him, and that could also explain the point I made yesterday, Jeevaka a very brilliant young student living in Pataliputra, travelling all the way to Takshashila to study medicine.


If Susruta's school was flourishing in Banaras, he would not have gone all the way; all this would be explained. So, it is very likely we are dealing with Vriddha Susruta, who lived prior to Panini. And, Vagbhata was a native of Sindh. He himself writes he was born in Sindh. The only controversy is, whether there are two books Astanga hrdaya, which is what I referred to, a wonderful poetry; I do not know whether he was a greater poet or a greater physician; whether he was the same person who wrote Astanga Sangraha. There are two books, both essentially dealing with the same subject; Astanga hrdaya acknowledges its debt to Astanga Sangraha, which is a bigger book.

There is some controversy whether it was same person who wrote, or whether it was father and son, that sort of thing controversy continues. Maybe with computational linguistics, if somebody takes interest in this, if they can have this present texts and compare them, it might be possible that you might find two different styles, there were two different individuals, that sort of area where modern technology could probably help us in identifying the real (()) Vagbhata.

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SYSTEMATIZATION OF AYURVEDA

- The systematization has stood the test of 2000 years.
- The main characteristics of systematization are the following:
 - Division of Ayurveda into health care (svasthavṛtta) and patient care (Āthuravṛtta).
 - Emphasis on doctrines which are foundational and unchanging while the superstructure relating to patient's treatment would change and evolve.
 - Classification of food and drinks.




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Now, the systematization which, that crystallized during this first to sixth centuries, that has survived for 2000 years. All these years, this arrangement, the details may change, but that arrangement had withstood the test of time. And, the main characteristics, which in the summary and initial contents I indicated this, division into svasthavṛtta and āthuravṛtta, emphasis on doctrines, foundational doctrines, classification of food and drinks, the human body, all this which I listed earlier, that is what systematization is, and that has stood the test of time, because India has gone through so many extraordinary changes during this period, but this has remained intact.

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SYSTEMATIZATION OF AYURVEDA

- Human body, anatomy of body parts; physiology of digestion and other functions.
- Diseases; classification, causation, diagnosis, prognosis, treatment by medical and surgical measures.
- Training of physicians.

- Among the “Great Three”, Charaka goes beyond systematized Ayurveda and shines his mental searchlight on philosophical topics such as evolution of the universe, logical parameters of debate and destiny.


The characteristics listed above will be discussed serially.

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And Charaka among these three, apart from all these which are really the nitty-gritty of medicine or Ayurveda, Charaka is the only person who goes into philosophy. It is almost a very, I use the word searchlight. He, dark areas not well explained, he has a way of shining his mind and clarifying;; in fact, Professor. Dasgupta's History of Indian Philosophy, he says in two areas, one is sankhya philosophy, we will touch on that later on. Charaka was one of the original contributors, because the original moola sankhya, it is very different from Ishwara Krishna's sankhya which we are all familiar with, second century AD.

You will find, Charaka deals with sankhya evolution, parinama very differently. And Dasgupta says, this is the original sankhya - moola sankhya and that is a contribution of Charaka. He was a great philosopher. Similarly, the logical parameters of debate, how to conduct a debate? There is a whole lot of, nyaya sutras, according to Dasgupta, they have borrowed from this. So, you will find that, Charaka apart from a great physician, a pioneer, he was also a great philosopher. He is the only one doing that; neither Sushruta nor Vagbhata went to philosophy the way Charaka does. And, I will be discussing these serially, but each one of these will be discussed in detail later on. But there must be some initial familiarity, before we go into these details; that is all I am trying to do today.

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HEALTH CARE (SVASTHAVṚTTA)

- Rated higher than patient care; prevention is better than cure.
- Health was not merely freedom from disease but living in harmony with the environment and all living beings, abjuring the extremes of non-use and overuse of nature's gift of sense objects.
- A code of conduct was prescribed for good health, which involved daily activities such as oral care, bath, exercise, food habits, sleep, sexual intercourse and details on hair cut, paring nails, use of walking stick etc.!



Svasthavṛtta occupied a large canvas

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Now, svasthavṛtta, a great, it has got much greater priority than the care of sick people. And, the health was not really freedom from disease. This is the modern WHO

definition; this is very much in line with Ayurveda and in living in harmony with the environment, harmony with all the living beings and abjuring the extremes of non-use of our senses, over use of our senses, mis-use of our senses. This is a very important concept, because essentially, that is sustainable consumption. When they talk about this use of senses, over use, under use, misuse, it is not only food, but all the resources which we have; if you have over use, then that is not sustainable.

So, what we talk about sustainable consumption today, that is what the old terminology, the phraseology that they are using; that is very essential, because if we keep on consuming, wasting, we have realized now the dangers of it. We simply, the earth will run out of its resources, we simply cannot. So, that is a very fundamental thing and you cannot have svasthavṛtta if you have over consumption, or under consumption in some areas.


So, that is one of the very basic principles. And then, the code of conduct in (()) for maintaining good health, not only the daily life, oral care, bath, exercise, food habits; very great detail goes into sleep, sexual activity, even minute things like wearing nails, haircut; nothing is spared; all these are described, even using a walking stick, using a turban; we go into all these fine details about daily life.

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HEALTH CARE (SVASTHAVṚTTA)

- Beyond daily code, there were stipulations on social conduct, avoidance of the temptations of wine and gambling and shunning the company of evil.
- Ayurveda prized rectitude, sincere effort and indifference to result, fearlessness, forgiveness and kinship to all forms of life. Jubilation in success and depression in defeat should give way to equanimity as a state of mind.

Svasthavṛtta occupied a large canvas



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And beyond this, there were stipulations on social conduct, like for example, when you yawn, you should cover your mouth; you should not speak very loud in company, be

modest; all that very great detail about social conduct; temptations of wine, in fact, wine was enjoyed. You will find in Ayurveda, the attitude is a very cheerful attitude. Food is not only to sustain your life, biological necessity, but also, you should enjoy; that is the attitude of Ayurveda; but that is not the primary object.

So, here you will find that, temptations of wine, of gambling; all those, they point out how they should be avoided. And then, above all, beyond bread it goes into rectitude, sincere effort, indifference to result; this is what, later on you have in Bhagavad Gita also, you have to work very hard, but do not worry too much about your result. This again, you will find in Charaka it is emphasized; fearlessness, forgiveness, kinship to all forms of life; this is the theme which comes again and again; see yourself in others, in the ant, in the bees, everywhere.

So, that is another, kinship with all life and jubilation in success and depression in defeat, it should be replaced by equanimity; and this always reminds me the, one of the greatest physicians in modern medicine was Sir William Osler and many of us regard him as the father of modern medicine; very great inspiring teacher, physician. He was Professor of medicine in four universities Oxford, Johns Hopkins, University of Pennsylvania, McGill University; very great man. And his, when he was leaving University of Pennsylvania and going away to Oxford, he gave an address and the title of that address was Aequanimitas; that is the Latin word; and there again, he points out this.


Incidentally, I am not very sure, how familiar Osler was with Indian medicine; he gave us a series of lectures in Yale University about History of Medicine and there, he hardly makes a reference to Indian medicine; there is a reference to Arab, China, but hardly anything about India. But I found that, apparently on his website table, there was a quotation from Kalidasa. So, very interesting, I do not know how that came, but he talks about Aequanimitas; very much like what is said here; this exultation when you get something and depression when you do not get it, that should be replaced by equanimity.

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PATIENT CARE (ĀTURAVṚTTA)

Ayurveda divided patient care into eight branches:

- **Surgery (Śalya):** removal of foreign bodies; drainage of abscesses; removal of dead fetus; setting of fracture; plastic reconstruction of nose, ear and lips; removal of bladder stone; couching for cataract, use of surgical instruments etc.
- **Śālākya:** Treatment of diseases of head and neck – eyes, ears, nose, mouth and throat.
- **Kāyacikitsa:** Treatment of diseases involving internal organs or all organs such as fever, bleeding, phthisis, dropsy, epilepsy, leprosy etc.



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Then, we come to aturavṛtta, I am only touching on these different subjects. Here, aturavṛtta was divided into eight branches in Ayurveda. One was, the first was salya, surgery, that was given the priority, and what kind of surgery did they do; there was no anesthesia at that time. So, there was severe limitations and knowledge of anatomy was limited. So, the removal of foreign bodies was one of the commonest; drainage of abscesses, removal of a dead fetus, setting of fractures, plastic reconstruction of the nose, ear and lips, removal of bladder stone, couching for cataract, use of surgical instruments, etcetera, all these we will be dealing with later on. But this gives an idea, of the kind of surgery which was practiced at that time.


And, salakya, the head and neck surgery was always considered separate from general surgery. This is head and eyes, ears, nose, like couching for cataract, for example. So, all these were a separate area of a medicine. Then, kayacikitsa is treatment of general diseases like fever, bleeding, phthisis, tuberculosis, dropsy, epilepsy, all that, what we call internal medicine today, that was another branch.

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PATIENT CARE (ĀTURAVṚTTA)

- **Bhūtaṁvidya:** treatment of diseases in children and adults which have unconventional features and defy common therapeutic measures.
- **Kaumārabhṛtya:** health care in children: breast feeding, nutrition; treatment of disorders caused by evil spirits.

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Bhutaṁvidya disease, these are diseases especially in children and also older people where the symptoms are unconventional, treatment is problematic; we do not really understand them; they are so unconventional; many of them, the descriptions, they look like psychiatric illnesses; when they are possessed by some evil planet and so on, that was another branch.

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PATIENT CARE (ĀTURAVṚTTA)

- **Bhūtaṁvidya:** treatment of diseases in children and adults which have unconventional features and defy common therapeutic measures.
- **Kaumārabhṛtya:** health care in children: breast feeding, nutrition; treatment of disorders caused by evil spirits.
- **Agadatantra:** Treatment of snake bite, insect bite; countering poisoning.
- **Rasāyana:** Procedures including formulations for rejuvenation of mind and body.
- **Vājīkaraṇa:** the enhancement of erectile function and fertility.



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Then kaumarabhṛtya, what we call pediatrics, children's ailments, health care in children, breastfeeding, how to select a nurse etcetera, etcetera, all that goes into pediatrics.

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PATIENT CARE (ĀTURAVṚTTA)

- **Agadatantra:** Treatment of snake bite, insect bite; countering poisoning.
- **Rasāyana:** Procedures including formulations for rejuvenation of mind and body.
- **Vājīkaraṇa:** the enhancement of erectile function and fertility.



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And, agadatantra is toxicology, especially snake bites, insect bites, spider bites. All these were so common. Even yesterday, I have heard in Buddhist time also, they were very greatly concerned about snake bites; it was so common; even today we have. So, that was a separate area, treatment was different. Then, we have rasayana, procedures to promote pain free ageing, if I may use that term. Ageing is inevitable; everybody will get old; but there is no need to have all kinds of infirmities, with creaky joints, stiff joints, cataract, all kinds of disabilities.

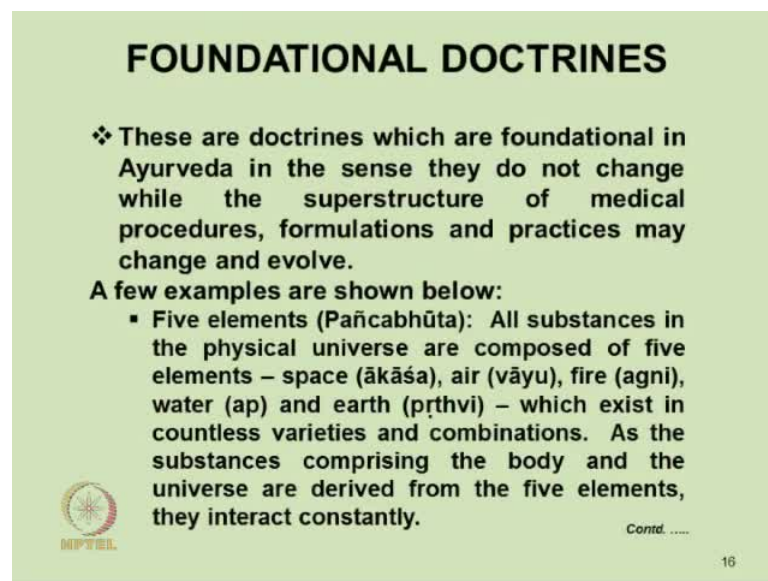
So, Ayurveda believed that, by timely intervention, rejuvenation, rasayana therapy, it is possible to grow old without too many of these infirmities; like (()); he would have to be in his nineties, yet no particular illness and he just faded away. So, that kind of, like a cells for example, if you grow cells, ideal conditions are provided, but will they go on. In fact, Alexis Carrel, many of you may have heard about him, a Noble laureate, a surgeon and he wrote the immortal book Man, The Unknown, and when he was in Rockefeller Institute in New York, he grew, cell culture was a great advance of that time and he grew cells, and he claimed that, if you provide ideal conditions, nutrition, temperature, etcetera, these cells will keep on growing; they are immortal; they are not cancer cells; they are normal cells.

And, he claimed that, heart muscle cells he was growing and throughout his life they were kept alive and when he passed away, that Rockefeller Institute continued to keep

this. Finally, somewhere in 1930s or 35 something like that, this was all destroyed. But now we know, this is not correct. There has been even questions about, Alexis Carrel's honesty has been questioned, whether he was making a false claim. But the charitable interpretation is, whenever they are putting the fresh medium, some new cells might have been introduced accidentally. But what happens is, a cell, ideal conditions, it will keep on replicating, say liver cells or (()), but after a certain number of replications, maybe thirty or fifty, they will automatically stop.

Lifetime is primed into that genome. Now, that is how normally the life should also end; not because disease and suffering. And vajikarana, the enhancement of erectile function, a very big problem at that time; also fertility. They were both lint and vajikarana was a larger, vaji actually means a horse; to give a man the sexual potency of a horse, a six year old horse. So, that is vajikarana; but it was always linked with fertility, especially ((a son)); this was the major.

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FOUNDATIONAL DOCTRINES

❖ These are doctrines which are foundational in Ayurveda in the sense they do not change while the superstructure of medical procedures, formulations and practices may change and evolve.

A few examples are shown below:

- Five elements (Pañcabhūta): All substances in the physical universe are composed of five elements – space (ākāśa), air (vāyu), fire (agni), water (ap) and earth (pṛthvi) – which exist in countless varieties and combinations. As the substances comprising the body and the universe are derived from the five elements, they interact constantly.

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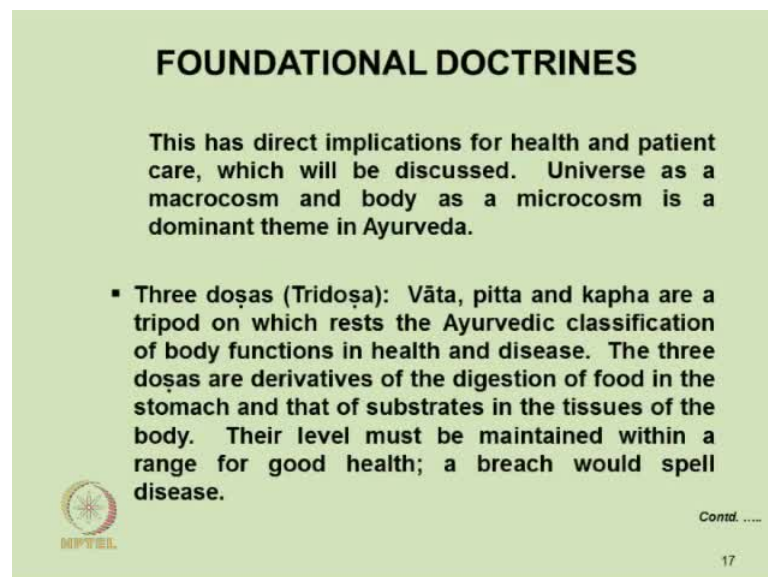
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Now, these are the doctrines which, when I say foundational doctrines, I have given a few examples which do not change. And take for example, one of the most fundamental, that is pancabhuta. In pancabhuta, these are space - akasha, air, fire, water, earth. These are the five elements which constitute the pancabhuta. And the pancabhuta doctrine says, all the universe that you see, they are composed of these five elements; so, is the human body.

So, whatever happens in the, in this, to the five elements in the Universe, they are bound to have a reflection in the five elements, which constitute our body. So, this has some medical implications, because, I will be dealing with it later on. So, I will not go into the details, but if substances in the body derived from these five elements, what we called dhatus, blood, muscle, bone, etcetera. If due to some abnormal conditions, there is an increase in one of these, or decrease in one of these, then how do you manipulate it, how do you bring, bring it back to the normal range. Then, you have got to give that substitute, the same substance of the same class, and if you want to decrease it, you have to give a substance with opposing properties.

Now, this is possible, and these are food, or drugs, etcetera, these are external substances which are composed of these five elements. So, unless this homology is there, you cannot just, you manipulate inside, increase or decrease this constituents of a body. So, there is a, pancabhuta is a doctrine, but it has its own medical interpretation or use. We will come to that in detail later on. Therefore, something like the human body, since we so faithfully reflect what is happening in nature, you can even regard the human body as a cosmic resonator; that is the way this...


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FOUNDATIONAL DOCTRINES

This has direct implications for health and patient care, which will be discussed. Universe as a macrocosm and body as a microcosm is a dominant theme in Ayurveda.

- **Three doṣas (Tridoṣa):** Vāta, pitta and kapha are a tripod on which rests the Ayurvedic classification of body functions in health and disease. The three doṣas are derivatives of the digestion of food in the stomach and that of substrates in the tissues of the body. Their level must be maintained within a range for good health; a breach would spell disease.

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The next is the three dosas vata, pitta and kapha. It has been extensively misunderstood. We will talk about it in some detail, because that is fundamental in Ayurveda. But essentially these are substances, they are not concepts. I have heard even Ayurvedic

scholars, sometimes, they talk about concepts. They are not concepts, because Charaka specifically says, they are the dravya's; they are substances. They are real. Now, what are these substances? These are products of digestion, food that we eat.

Similarly, the substrates in all our tissues, the dhatus, there is constant activity going on; fires are burning, just like the stomach, that agni is burning, burning food. Similarly, in all these tissues, there are Agni is burning, according to Ayurveda; burning substances or substrates. Now, that also produces waste products; just like the food which is digested, one part becomes part of the body, assimilated, rest of it is thrown away as malas

Similarly, in all these dhatus also, there are malas, which are produced during the burning and all these malas in Ayurveda, they have a very important role. They are not toxic necessarily. So, as long as they remain within that prescribed range, then they are essential for the body; they are called maladhatus actually. But once they cross that range, they become excess. Then, they are dosas. So, these vata, pitta, kapha, these are actually three dosas; they are part of this mala category, but if they are in normal range, they are healthy; they are necessary for our health.


It is something like saying, it is, I do not like to use this analogies too much, but say cholesterol, for example. There are many people, who believe cholesterol is a great toxic thing, a poison. It is completely incorrect. It is a normal body metabolite, that is necessary for cell membrane stabilization; but if you goes beyond range, it is a very different story. It is something like that here also. In Ayurveda, these vata, pitta, kapha, they are essential; they are part of that mala category. But if they cross their boundaries, then they become toxic; they damage the cells, or tissues. That is a very basic concept; it comes up again and again; we will go into it in detail later on.

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FOUNDATIONAL DOCTRINES

- **Taste (Rasa):** plays a central role in the selection of drugs and diet for patients in Ayurveda. A shorthand for chemistry, “Rasa” is one of the four important factors in working out the digestion of food and drugs in the body. The physiology of digestion and pharmacologic action of drugs are explained on the basis of rasa theory.

There are several other foundational doctrines including imprudent action (prajñāparādha) which drives a man to erroneous conduct in spite of himself.



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Then we have taste rasa, another very foundational doctrine; whether it is Charaka, Susruta, Vagbhata, everywhere you will find taste, rasa. And, this term came at a time when there was no chemistry. Chemistry was not known; and rasa, taste was used as a term to indicate chemistry. It is a shorthand for chemistry. So, there are six primary tastes, secondary tastes, etcetera. Now, that was an indication for, as far as pharmacology is concerned, when you eat food, for example, that food is eaten, and then it gets digested in the stomach, and then if you belch, it, there is a different taste at that time, because chemistry has changed; post digestive taste.

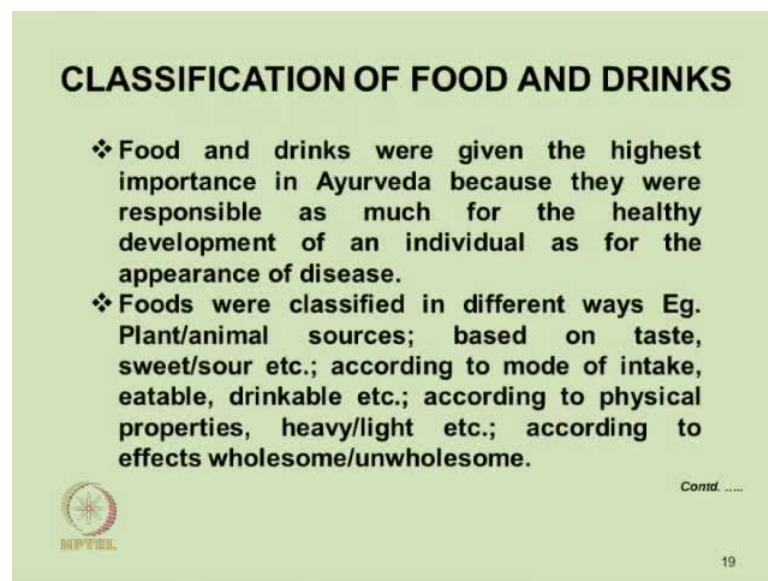
Now, that taste, the next is, you find here rasa, virya, that is potency, which is also different. All substances (()) they do not have the same potency. Potency is what brings about action; some things when you take, you vomit. When you give a drug, anemetic, you vomit; that activity to bring about vomiting, that is potency. And, substances have different potency. So, that is the third factor. And lastly, prabhava which are, there are unknown factors. All these three taste post digestive taste, potency they cannot explain all activities of substances that we take.

Now, that is prabhava. So, these four characteristics relating to substances, they are the cornerstones of Ayurvedic pharmacology. That is another very important foundational doctrine. These, hardly any change, throughout these centuries. But there are others also like prajnaparadha, nothing to do with the way of this, that is a behavior pattern, where

we know something to be wrong but we persist in doing it. For example, alcohol. Everybody knows, constant intake of alcohol, you will have cirrhosis of the liver, can be fatal, but still people keep on drinking. Smoking, everyone knows if you keep on smoking, you can have oral cancer, you can have lung cancer, you would get coronary artery disease.

This is well established, enormous literature on that. You see examples all around you, but does it stop people? They will still keep doing it. This is Charaka who says prajnaparadha; what we call lifestyle diseases now, it was called in those days, an important category of diseases, prajnaparadha. That is, intellectual error and this malpractice or misconduct, whatever you would like to call it, knowingly persisting in what is harmful to you; that prajnaparadha that is another important doctrine.

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CLASSIFICATION OF FOOD AND DRINKS

- ❖ Food and drinks were given the highest importance in Ayurveda because they were responsible as much for the healthy development of an individual as for the appearance of disease.
- ❖ Foods were classified in different ways Eg. Plant/animal sources; based on taste, sweet/sour etc.; according to mode of intake, eatable, drinkable etc.; according to physical properties, heavy/light etc.; according to effects wholesome/unwholesome.

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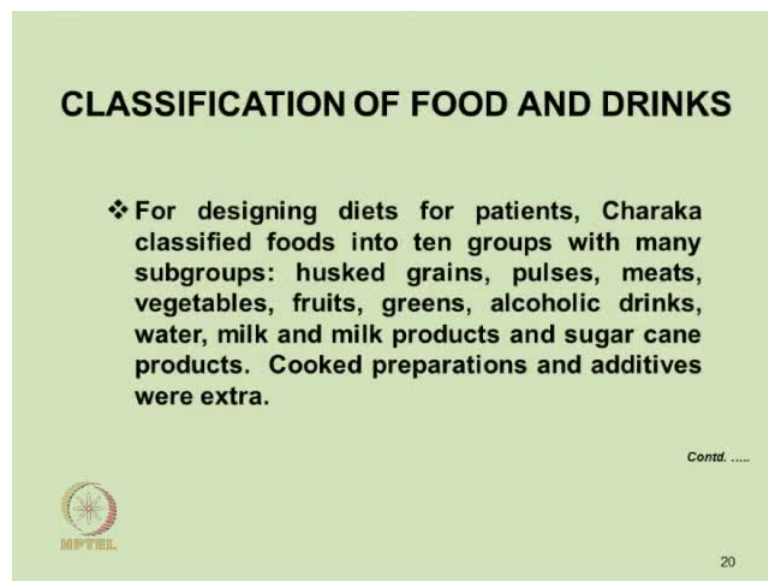
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Then, we come to food and drinks, very important; in fact, one of the longest chapters in both Charaka as well as Susrutha; Charaka especially, he goes into very great length and because the food and drinks are responsible, without that you cannot have any health, because body is constantly depleting and to replenish what is being lost, you need constant input of food and drinks. So, great importance was given. But at the same time, if the food had incompatible things in it, or if it was polluted, or inadequate, etcetera, it could also give rise to diseases.

So, it was both the source of health and also a source of ill health. So, great importance was attached to that. And different type of classifications, plant, animal sources, based on taste, it could be based on the type of eatable, drinkable, etcetera, that kind of classification, physical properties, it is heavy or light; heavy means it is not easily digested, that is another classification; whether it is wholesome or unwholesome; so many different types of classifications of food.

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CLASSIFICATION OF FOOD AND DRINKS

❖ For designing diets for patients, Charaka classified foods into ten groups with many subgroups: husked grains, pulses, meats, vegetables, fruits, greens, alcoholic drinks, water, milk and milk products and sugar cane products. Cooked preparations and additives were extra.

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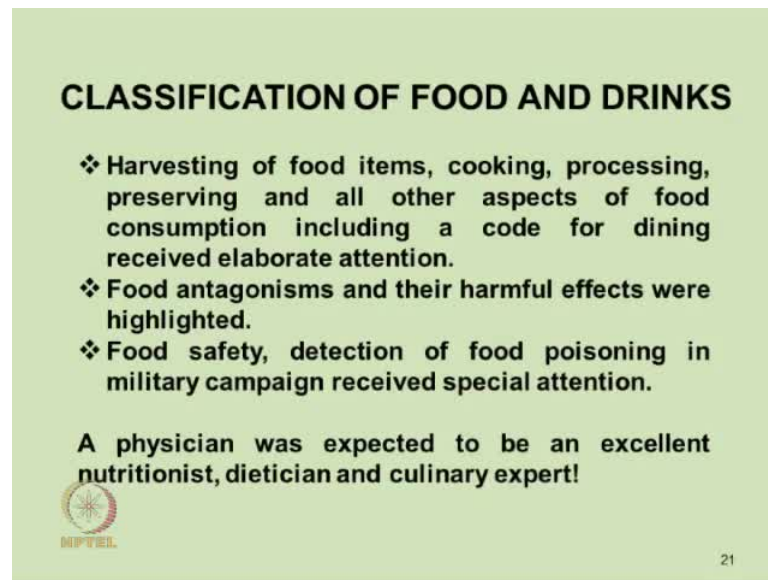
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And, Charaka for designing diets for patients that was important, because diet, pathya was an important part of treatment; as important as formulations. So, each patient had have a particular diet designed for him, depending on the kind of illness he had, his strength, the season and so on. Now, this was, Charaka classified them into ten different groups with many, many subgroups, like grains, pulses; we will discuss this at great length later on.

But it also shows the enormous knowledge they had about, they go into the type of how do you grow this rice, what kind of soil do you, what kind of, where do you get it from, what kind of manure that you are using; all these go into very great detail about the cultivation of these food items, collection, animals, different types of animals, which part of the animal is heavy, which part of the animal is light, into such a very fine detail about food and drinks.

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CLASSIFICATION OF FOOD AND DRINKS

- ❖ Harvesting of food items, cooking, processing, preserving and all other aspects of food consumption including a code for dining received elaborate attention.
- ❖ Food antagonisms and their harmful effects were highlighted.
- ❖ Food safety, detection of food poisoning in military campaign received special attention.

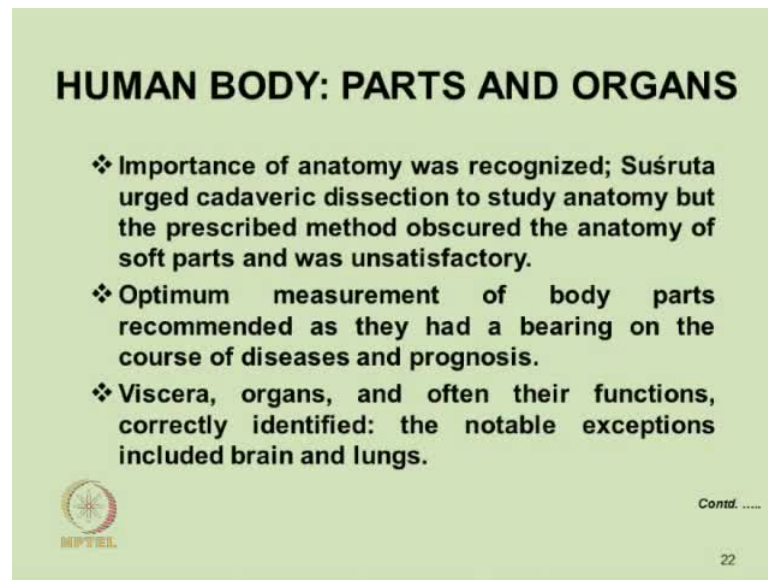
A physician was expected to be an excellent nutritionist, dietician and culinary expert!

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Now, here, harvesting of food items, cooking, processing, preserving and all other aspects of food consumption, including a court for dining, that is also there. And food antagonisms, there is a whole table which I will be showing later on. How certain items cannot be combined with others; in fact, they are even supposed to have fatal result sometimes. All those are described, food antagonisms. And food safety; in fact, when the kings used to go on conquests, they always had their physician with him and the physician's tent was next to the king's. He had always access to the king; and one of his jobs, was he was a supervisor of the royal kitchen on these campaigns.


Campaigns will take several months and he had to check the food, raw materials coming from the market, cooking, getting it tasted, giving it to animals, giving it to other dogs, crows, etcetera. So, getting it tested, that was his job, to ensure that the food was safe. So, food safety and suppose food poisoning happened, how do you treat it? Therefore, there is a, especially Vagbhata, he gives a long mutual description of the duties of a royal physician, how to supervise the kitchen. So, physician in those days, he was not only a physician, he was also a nutritionist; he was a culinary expert. All these jobs he had to do, that is all the food and drinks, they take a very large part of Ayurveda.

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HUMAN BODY: PARTS AND ORGANS

- ❖ Importance of anatomy was recognized; Suśruta urged cadaveric dissection to study anatomy but the prescribed method obscured the anatomy of soft parts and was unsatisfactory.
- ❖ Optimum measurement of body parts recommended as they had a bearing on the course of diseases and prognosis.
- ❖ Viscera, organs, and often their functions, correctly identified: the notable exceptions included brain and lungs.

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Then we will come to human body, parts and organs. This was recognized, the importance of anatomy, and Susruta described, he said that, dissection is the only way you can understand human body. But at that time the taboos attached to dead body was, were such, it looks like that, touching a dead body would defile a person, leave aside cutting it with a knife. So, what the practice, which was strange practice, was a dead body would be put inside a wooden cage, it is not completely air tight, some water could get in. And, this will be kept in a shallow water body, in a stream for example, in a dark area, so that people do not see it. It was to be done almost like in secrecy.

It was kept in a dark place and for almost a week it is left there to rot. At that point, you take a sharp leaves, like darbha, there are sharp edges, because you do not use a knife; and with this, you have to scrape off layer by layer; this is how dead body was dissected. It is only two or three paragraphs, but you can well imagine, this kind of dissection is highly imperfect. You really cannot understand human anatomy, because the muscles, they would all have rotten; you cannot get a proper appreciation of muscles, number of muscles, their relationships. Only the hard parts, bones, cartilages, teeth, only those you could have a reasonable idea from this kind of dissection. That was part of our sociologic restrictions. I have no idea how it was, but that is how dissection. And nobody subsequently, that is another great mystery, how in Europe, it was a huge leap in medical advance, when they started dissecting the body, because you get a complete picture, when you do surgery without anatomy, how do you do surgery? But nobody here, this

particular, very unsatisfactory way of doing a human body dissection. How over thousand years, thousands of years, nobody ever questioned it? This is a mystery to me and we paid heavily for that kind of lapse on our part.

Optimum measurements of body parts, legs, arms, etcetera; that was, in fact, they are all given; the viscera, organs, their functions, they were all reasonably identified, the liver and the spleen, intestine. They are identified and also some reasonable idea about their function; but there were two exceptions, very important exceptions, where they knew the existence, but the function was not understood. One is brain; (()) it was known, described, but the function of the brain was not known. All that, be it our emotions, our thoughts, reasoning ability, all these were attributed to the heart; they were located in the heart, not in the brain.


This is a strange, the only Bhela alone, with that imperfect samhita which I mentioned, he is the only one among all these ancient authors who said the sensations, cognition, etcetera it is between the hard palate and the top of the skull. That is the only reference we have; otherwise, all of them Charaka, Susruta, Vagbhata, they all attribute these two cognitive functions to the heart. Another is lungs; (()), (()) two terms are used, but the function of lungs is not known; breathing, the movement of the wind, compartmentalization of the wind, yesterday I referred to that.

They knew there was a wind in the body, life breath, but life breath had many components; one remaining in the upper part of the body, one remaining in the lower part of the body, one moving things around, things are moving like blood is moving. So, many things are moving in the body, within the body and all these movements, where the motor was wind; that is another type of wind. So, different types of components of the wind, all this was told. Inspiration and expiration was known, but the lungs, that was not, functions is not mentioned at all. So, these are two, existence was known, but the functions were not known.

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HUMAN BODY: PARTS AND ORGANS

- ❖ “Vital spots” (marmas) which were believed to be fatal if injured were identified in detail. However its practice passed into martial arts from Ayurveda.
- ❖ Physiology of digestion understood and described: circulation of blood left unclear; cognitive functions connected to heart; brain function not recognised (except by Bhela).
- ❖ Organ pathology seldom described.



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And vital spots, these are marmas, Vedic mentioned marman, it is. So, it was known for a long time. These are critical vital spots in the body, where injury, or a sickness, or anything would be very dangerous. And, there are classes, there are hundred and seven marmas in the body, classified in many different ways where muscles are dominant, vessels are dominant, etcetera, and various types of, some are immediately fatal, which are correct, for example, injuries between the breast, central part of the body, heart is there, damage would be immediately fatal, which is understandable. They must have seen, like a spear, or a sword some kind of injury, immediately fatal. But there are others, marman, there is a marman between the big and the second toe in the foot.

Now, it is very difficult for us to understand how that can be so very critical; but when you read the description, you find that this, after injury there, this patient, this man who was injured, he would develop wild and convulsive movements and he would die, obviously it is tetanus. So, an injury there, develops tetanus; after all, they are walking barefoot; he could develop infection, tetanus and he dies. So, that is considered a marman; not in the same way an injury to the heart. So, we have to interpret, some of them we cannot interpret.

So, but this concept was important for the surgeon, because when they make an incision, they have to stay away from these areas; that was the importance of this marman. And, with the decline of surgery, which I referred to yesterday, all these marma concept,

today's Ayurvedic physicians, there are, they know there are marmas, but nobody actually pays any attention. But strangely, it found its way into martial arts; in Kerala for example, kalaripayattu, it is a big martial arts, and there they pay a lot of attention to this vital spots.

So, it disappeared from the main stream Ayurveda, found its way into martial arts. And the physiology, as we understand it, in Ayurveda, to my mind, digestion of food, we can really understand in modern terms; you will be talking about it later on, but other systems, circulation, it is not really in the way we understand circulation; respiration, all these modern terms, they had their own understanding. We should present it realistically, but at the same time, try to have an understanding, how is it in today's terms, how do we understand it.

So, in terms of physiology, and I have already mentioned brain, very little and organ pathology, which is what we call pathophysiology; this is something I will be spending a little time on that, because if you have, for example, a child is who is getting a sore throat; and some sore throats are dangerous, because streptococcal infection and that can later on lead, after several months to attacks on the heart. Now, during that process, something is happening in the body; because that what looked like an innocent throat infection, which could be easily neglected, nothing maybe done and later on, this child become sick; there is a heart murmur, the valve is damaged and so on.


Now, during that process, from the onset of an initial, a trivial illness, you find that it keeps on progressing and ultimately the florid form of the disease appears. So, during that disease process, the pathophysiology involving the immune system, involving the cells, involving multiple organs, now, that whole process, there is no, that subject was not really recognized even in western medicine. But in Ayurveda, how did they, after all they had seen the cause, they had been treating the disease, what was their idea of the progress of this disease in the body, when he had not come to you as a patient.

Now, that is something, we have to pay some attention, I have tried to get; they were aware of this, but they are here and there, they are dealt with. So, if you bring it all together, what was the Ayurvedic understanding of a disease process, pathophysiology, like this organ pathology, which is not mentioned as such anywhere, but they were aware of it. So, this I will be discussing with it later on.

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HUMAN BODY: PARTS AND ORGANS

❖ Charaka's total of bones in the human body was 360 which corresponded to the Atharvan total. However Suśruta explicitly differed from the "followers of Veda" and gave the total as 300. Modern anatomy gives the figure as 200. The ancient total included other hard parts such as teeth, cartilages etc.




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Now, Charaka's total body, the anatomy 360 bones and he conformed to the Atharvan Vedic total, 360; but Susruta says, I do not agree with this Vedic total; it is only 300. But the actual is only 200. And the reason was, many of these cartilages, teeth, all these are regarded as bones, hard tissues. So, they came with this very high figure. Even prominence of certain, like rib, the back of the rib, there is the prominence of the rib, what we call a protuberance. Now, that is also considered as a separate bone in Ayurveda. So, they reached this total.

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HUMAN BODY: PARTS AND ORGANS

❖ Embryogenesis was of much interest; monthly sequence of development of fetus from jelly stage to full term was discussed by Charaka. This topic was of universal interest as it merited discussion or mention in Garbhopaniṣad of Atharvaveda, Suśruta, Bhāgavata and Rāmāyana!




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And embryogenesis, that is a very great interest in Ayurveda. And, they had their own ideas; there is the long debate in Charaka Samhita; all the disciples having their own views about how the embryo forms, how the embryo grows, all the different time horizons of the development, how the mother during the third month, they have all these (()) the desire to eat raw fruits, sour things and so on; how that comes about, etcetera, very interesting. So, this is the subject embryogenesis is of great interest in our Ayurveda; not only Ayurveda, Ramayana has a very detailed description, so has Bhagavata. So, it was a subject of universal interest in Ancient India.

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HUMAN BODY: PARTS AND ORGANS

- ❖ No clarity on dhamani, sira and srotas except they were all important body channels transporting a variety of substances including nutrient sap, blood, doṣas, air etc. No definite identification with artery, vein and lymphatics possible.
- ❖ The function of vāyu was recognised as the basis of respiration; of two components of vāyu, prāṇa and udāna were believed to course through trachea (mahāsrota). Prāṇa was located in the head, chest, ears, tongue, mouth and nose; udāna in chest and throat. Role of lungs not recognised.

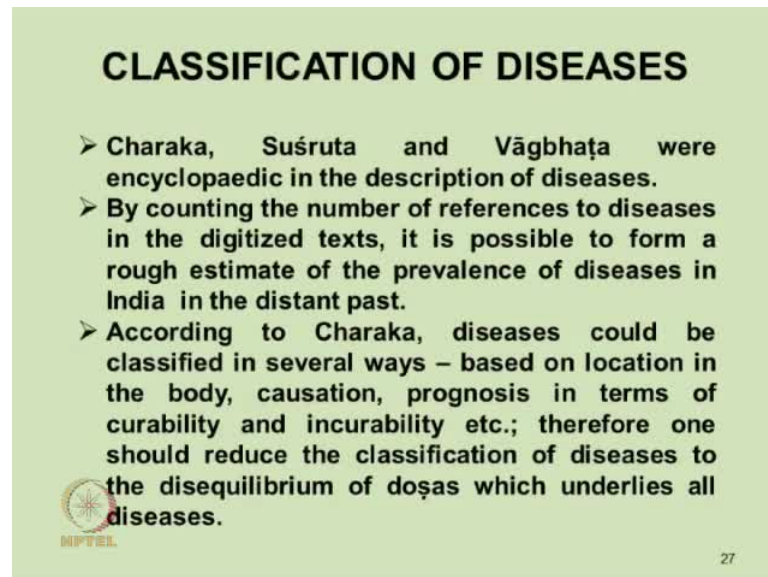
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Then, we come to conduits in the body. They knew that blood had to move, air had to move, everything had to move; even what we consider solids, according to them, are moving; like muscle, it was not a static thing; there is movement inside the muscle. How do these things move and there were (()) and there were dhamani, sira, srotas, these are all used; naadi is also there; but it is very difficult to clearly say this is artery, this is vein, this is lymphatics; I have tried, many others have tried and (()), one of the great scholars of earlier twentieth century who had studied the subject, and he says finally, at the end of this very difficult exercise, this is a standing puzzle that is how he concludes.

We cannot really, but these are all conduits, but that clear identification, in terms of modern understanding of body channels, difficult to do that. And, function of the vāyu, respiration, these parts were recognized like prana, udana. This kind of division of air in


the body, life breath that was known; prana for example, was located in the head, chest, upper part of the body, and udana in the chest and throat. So, somebody getting asthma for example, this is udanas disturbance; that is how they would look upon that; that is how it would be treated and the role of lungs was not recognized.

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CLASSIFICATION OF DISEASES

- Charaka, Suśruta and Vāgbhaṭa were encyclopaedic in the description of diseases.
- By counting the number of references to diseases in the digitized texts, it is possible to form a rough estimate of the prevalence of diseases in India in the distant past.
- According to Charaka, diseases could be classified in several ways – based on location in the body, causation, prognosis in terms of curability and incurability etc.; therefore one should reduce the classification of diseases to the disequilibrium of doṣas which underlies all diseases.

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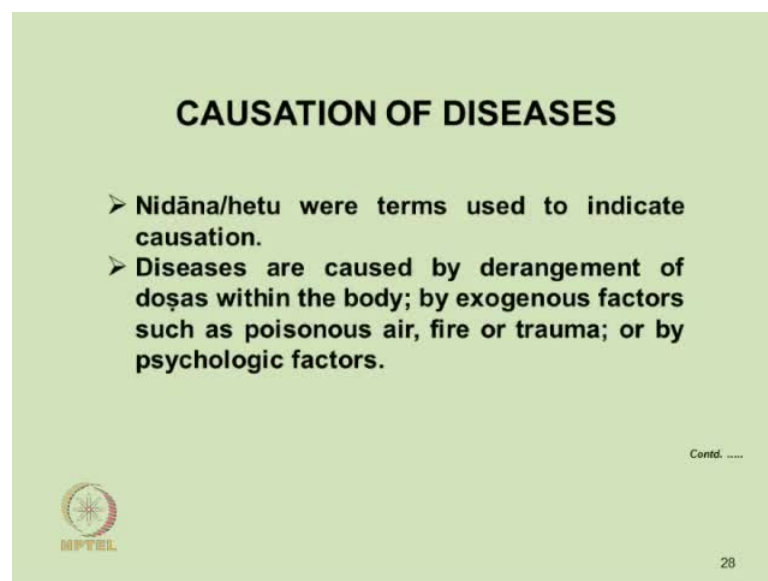
Then the diseases, it is an encyclopedia of diseases, so many; if you look at them, so many great diseases; many of them are still with us; some of them have disappeared. I tried the, which I will be presenting later on, is it possible to have some idea about the kind of diseases which existed in Charaka's time, 2000 years ago what we call epidemiology. We know for example, a coronary artery disease, or kidney disease; we have a rough idea of how many people, 10000 or hundred thousand population, how many people have coronary artery disease, 10 percent, 5 percent, whatever; that kind of information we have, that is epidemiology. And we can measure, after 10 years what is happening? Is it possible to do something like that, what happened in 2000 years ago?

I have done an interesting exercise, which I will presenting later on; but what looks interesting, there are, there is a disease which, considered fatal in Charaka's time, we do not see it today. Many others which existed then, like tuberculosis, malaria, they are still with us. No, no change at all. Many of them, dreaded in his time, like typhoid fever, we no longer, they are not an object of terror at all. They are easily treated. So, you get a very good idea about these diseases. Classification of diseases, again so many different

diseases like location in the body, causation, prognosis in terms of curability, incurability, etcetera; so many different ways, you can classify diseases.

Charaka, in that regard, so many classifications; and if you go to different regions of India, you will find different ways of classification. Instead of doing this kind of multiple ways of classifying diseases, why not bring it to a common basis? Disturbance of the dosas, the three dosas. Without their disturbance, there can be no disease. So, why not define, redefine diseases in terms of the disturbance of dosas. So, Ayurvedic diagnosis is really not making a diagnosis of a disease conforming to international classification of diseases, giving it a label. That was not at all what Ayurvedic diagnosis is; that is to detect, what is the dosa perturbation; that is what they are determining. So, all these multiple terms that we use, they need not confuse us; this was Charaka's approach to diagnosis.

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CAUSATION OF DISEASES

- **Nidāna/hetu** were terms used to indicate causation.
- **Diseases** are caused by derangement of doṣas within the body; by exogenous factors such as poisonous air, fire or trauma; or by psychologic factors.

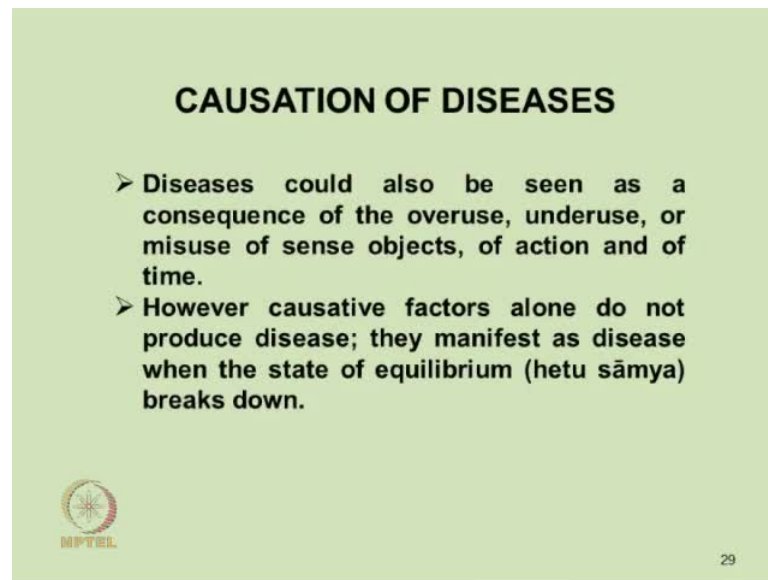
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Now, nidana, coming to causation, nidana, hetu, karana, these are all terms used to signify causation and diseases can be caused by derangement of dosas in the body, or it could be exogenous factors, for example, their extensive pollution, which could produce some disease, or it could be psychological factors; all these could be causative of diseases.

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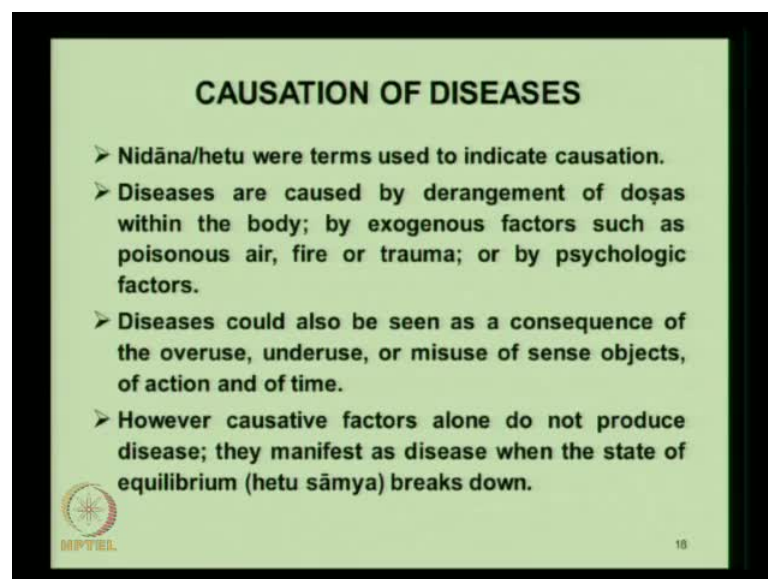
CAUSATION OF DISEASES

- Diseases could also be seen as a consequence of the overuse, underuse, or misuse of sense objects, of action and of time.
- However causative factors alone do not produce disease; they manifest as disease when the state of equilibrium (hetu sāmya) breaks down.

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And, they could also be seen as a consequence of overuse, misuse of sense objects and, but the important point which Charaka makes, cause is fine, but cause alone is not sufficient to produce diseases.

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CAUSATION OF DISEASES

- Nidāna/hetu were terms used to indicate causation.
- Diseases are caused by derangement of doṣas within the body; by exogenous factors such as poisonous air, fire or trauma; or by psychologic factors.
- Diseases could also be seen as a consequence of the overuse, underuse, or misuse of sense objects, of action and of time.
- However causative factors alone do not produce disease; they manifest as disease when the state of equilibrium (hetu sāmya) breaks down.

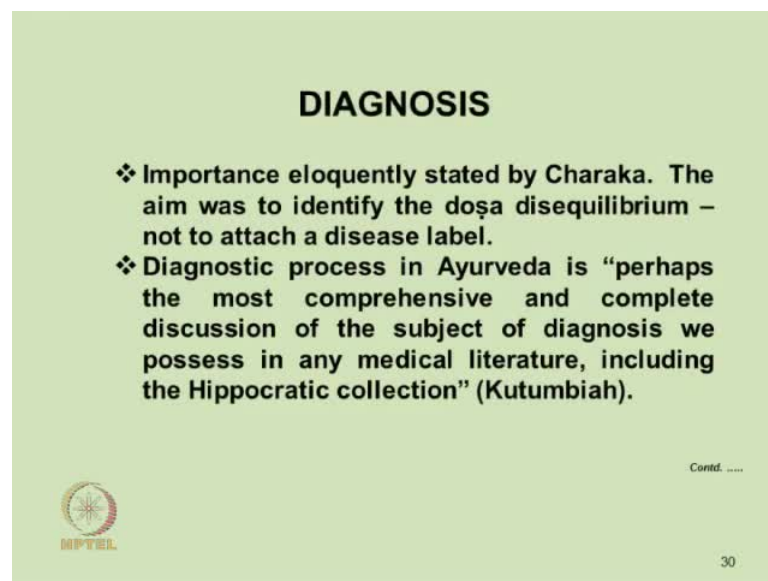
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Because causes exist within the body, causes exist all around us; you cannot sanitize the body for the environment. They will always be there. But in spite of all these causes being there, most of us are healthy. How is it possible? If causes are existing without

causing diseases, that is a very important subject in Ayurveda, because health is a state of equilibrium, the samya.

Now, that samya is what protects us samya means, which we will discuss all this later, that samya is what protects us; equilibrium of dosas; equilibrium of dathus; equilibrium of body with the environment; equilibrium of various fires burning in the body [FL] agnis in the tissues; and then, there is one called hetu samya. Hetu samya is this, you have so many hetus in the body, but they are not causing any disease. So, there is a balance, the samya state between the body and all these causes. If that equilibrium breaks due to some reason, then these causes begin to act; they may be sitting inside the body without causing any disease, but if, if that samya breaks, then they immediately trigger disease. So, that is a very important factor.

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DIAGNOSIS

- ❖ Importance eloquently stated by Charaka. The aim was to identify the doṣa disequilibrium – not to attach a disease label.
- ❖ Diagnostic process in Ayurveda is “perhaps the most comprehensive and complete discussion of the subject of diagnosis we possess in any medical literature, including the Hippocratic collection” (Kutumbiah).

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Then, we come to diagnosis; dealt with in great detail again; looking for a particular disturbance of dosa samya, that is what disease is’ and Kutumbiah, one of the great physician of Vellore, in his book on Indian medicine, there he talks about it. He says the kind of diagnostic, the detail which is given by Charaka, it is the most comprehensive that he has ever seen; even much more than what he finds in Corpus Hippocratica. Diagnostic process, there are three stages; one is the preliminary examination, that is, am I qualified, am I competitive to treat this disease. Nobody asked those questions.

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DIAGNOSIS

❖ Diagnostic process starts with the initial step to address ten questions such as, does the physician (karaṇa) have the competence to treat the illness? are the necessary drugs (upakaraṇa) and preparatory facilities available? what is the patient's derangement of doṣas? (kāryayoni) etc.

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Do I have all the equipment to treat him? Questions of that kind, that is important. The second is, once that is done, the preliminary assessment, the patients dosa prakruthi, things of that kind; that is the second. The balance between the patient's strength and the dosa, all these are preliminary assessments; one's own, patient, physician's assessment, the patient's general assessment, and then we come to the third, what is what we do in an outpatient department today, your interrogation, inspection, palpation, all those examinations are done. But here, in the that second phase of examination, there is a particular part which is called desha.

I am just giving an example of how detailed, how much detail; and desha means the land, the location, or the locale, that it what it means. But here, Charaka uses desha in that second part of the diagnostic assessment, it is the place where this man is staying, the patient. And there, you will find the kind of people who are living there, the kind of diseases they have there, what kind food do they eat, what kind of medicinal plants grows there, all kinds of questions about that place.

Now, that is something interesting because, a patient, where he comes from, details of that place, that reminded me, in modern medicine, all of you would have heard about Sir Arthur Conan Doyle who wrote Sherlock Holmes, and Arthur Conan Doyle was a doctor. When he studied medicine in Edinburgh, he had a professor called Sir Joseph

Bell; and this Joseph Bell was a remarkable man. In the outpatient department and there was an old doctor from Kerala, who was in Edinburgh at that time, and it is from his son that I heard this story.

When a patient would come, in Scotland very cold, a farmer would come; and Arthur Conan Doyle was the student; and this Joseph Bell was the professor. When a man would be coming, he would say stop there; he would not ask any questions; but, without asking a single question he would say, this man is from Lanarkshire, he is a farmer, he is probably cultivating something; like that he will give a series of statements, then call that man, and ask him; and ninety percent of whatever he said would be correct; because what he was doing, little things, the kind the boots he was wearing, the clay sticking to the boots, some hay is sticking there, the way he was wearing his cap with a tilt one side, all those, which none of us would pay any attention to these little things, but they signify great things.


A lot of it is understood, and this man would know (()) Lanarkshire there certain diseases are more common in that area. So, this Arthur Conan Doyle, a lot of his ability to infer things came from Joseph Bell. So, when you read about Charaka asking these questions, about this place where this man is coming from. Today, none of us would pay any attention. We do not even ask where he is coming from.

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DIAGNOSIS

- ❖ The examination of the patient included clinical history from the patient, and careful assessment of his clinical features.
- ❖ Diagnosis went beyond identification and involved the determination of the stage of the disease, from the total of five stages.

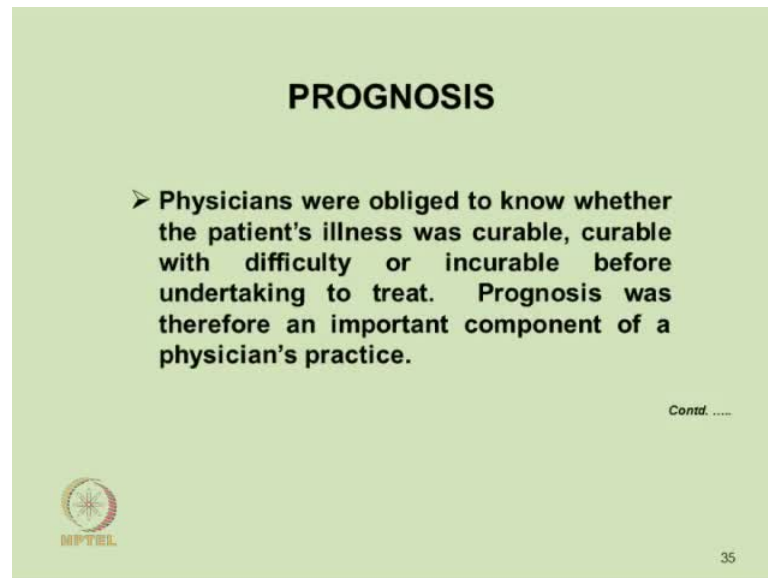
Only when all these steps are completed could one claim that diagnosis has been made.



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So, that diagnostic exercise, a very elaborate exercise, and the, for the, what we do today in the outpatient, that is the third part, clinical history of the patient, assessment, etcetera. All the senses are used except taste, and taste is used like a diabetic patient, his urine, are there ants coming there. So, taste is, indirect way it is used; otherwise, all the others, touch sensations, smell they are all used.


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PROGNOSIS

➤ Physicians were obliged to know whether the patient's illness was curable, curable with difficulty or incurable before undertaking to treat. Prognosis was therefore an important component of a physician's practice.

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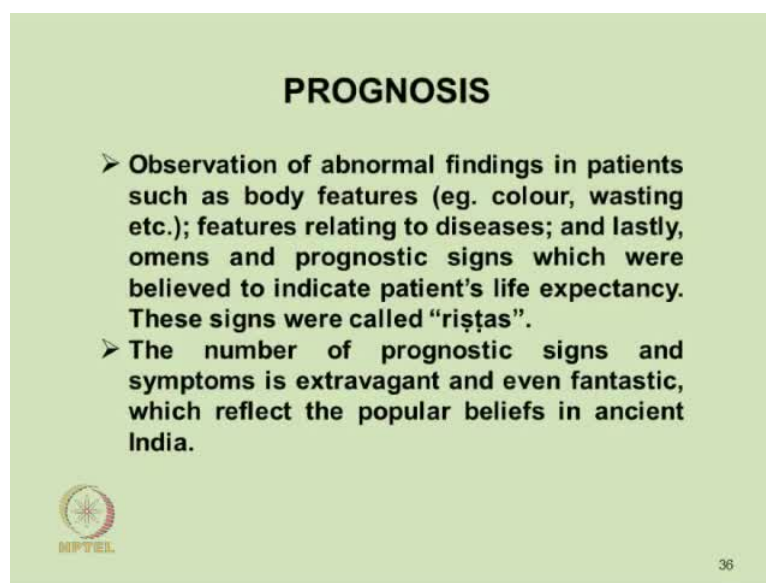
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And prognosis, the shape of things to come; very important. A patients' most important question is, what will happen to me, that is what he will ask; the relations also, that is the most important question. We have to have some idea about prognosis and Charaka says, one of the first things you have to do as a physician, once you have gone through this diagnostic process, you have to decide whether the disease is curable, is it curable with difficulty, or is it incurable? You should decide before you start treating.

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PROGNOSIS

- Observation of abnormal findings in patients such as body features (eg. colour, wasting etc.); features relating to diseases; and lastly, omens and prognostic signs which were believed to indicate patient's life expectancy. These signs were called "riṣṭas".
- The number of prognostic signs and symptoms is extravagant and even fantastic, which reflect the popular beliefs in ancient India.



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That is one of the important... So you have to have some idea of prognosis and that, there are findings in the patient, for example, general wasting of a patient, general condition, a severe pallor affecting the whole body; then the disease itself, like tuberculosis, the man is coughing, sputum coming with blood, blood stained sputum, those are all diseases, but the localized more or less; and general appearance, anemia, pallor, wasting and so on. So, the general appearance, features relating to the disease, and lastly, omens, various other prognostic signs, a lot of importance was given to this; but the importance of that is somewhat less.

I will be presenting this later on, because the belief in the community even today, majority of people believe in many of these. And in Ayurveda, they would never take the view, you are all idiots; you do not know anything; that Ayurveda never had. They always respected these. They do not necessarily accept, because I will show you a table later on; Charaka gives all these, some seventy types of observations; people believed in them. If a jackal is howling as you are taking the patient, many people believe that is an evil sign.

Now, if you ridicule them, that does not help; it only creates more pressure on them. So, Ayurveda would never condemn any of these. So, in that, when Charaka gives a classification, many of them are actual physical signs about wasting, or appearance of blue color, etcetera, he gives, but then, there is another column where many of these are

there. And interpreting these, the actual physical findings of severe pallor, sudden appearance of coldness, etcetera, serious signs, all these are given and they should be examined by knowledge, by inference, the standard way you make a diagnosis.

But the other column, there he says, you must use your discretion; you must use the words of receptors, people very experienced; you should listen to them; use your discretion. So, there is a certain liberality in the Ayurvedic approach, there is no intolerant, dissenting views. So, here again, you will find the place of prognostic science, some of them called *ristas*. In fact, a whole series of them, the signs of impending death; got some seventy or eighty of them. Many of them do not look like signs of impending death to me, because I see so often, but they are all mentioned there. Then Charaka says, at the end of it, you may interpret it according to your discretion, so that *ristas*.

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TREATMENT BY MEDICAL PROCEDURES AND FORMULATIONS

- Simple perturbation of *doṣas* dealt with by pacificatory measures (*śamana*).
- Severe perturbation of *doṣas* would require evacuative/detoxifying procedures (*śodhana*) and medicinal formulations.
- *Śodhana* procedures include emesis, purgation, enemas and nasal purging – all preceded by lubricant therapy and fomentation.

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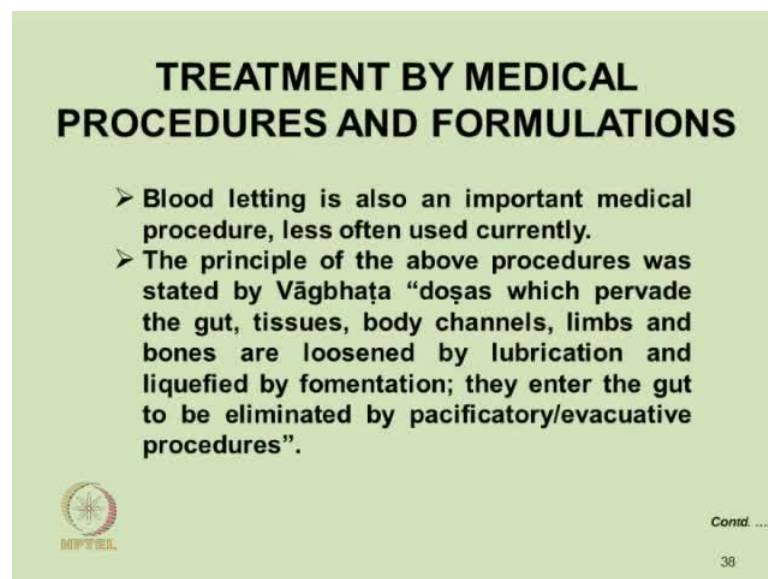
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Then medical procedures and formulations. If the illness is a mild type of illness, then this *samana*; simple treatment, that is fasting, some medical formulations are given, rest, that would take care of most of the illness; but if there is a more severe type of illness, greater perturbation of the *dosas*, especially excess of *dosas*; suppose, a man is having lot productive sputum, that kind of illness, then you will need what is called *sodhana*, which means these perturbed *dosas* must be eliminated, procedures like *pancakarma*, etcetera, have to be done; that becomes a different more serious type of illness.


And sodhana procedures are mentioned here, emesis, purgation, this is pancakarma, and these are always preceded by (()), that is oily substances are given by mouth and also body fomentation; these are done always as preliminaries. Then, depending on, suppose the illness is the upper part of the body, then you will give emesis to get rid of this perturbed dosas, or it could be purgation, or it could be enemas. And Vagbhata says, that I have quoted here, ‘the whole principle of pancakarma, this emesis and purgation, if the body is within the’, we have the alimentary canal in the center of the body, the gut and skin outside; in between this is the body, that compartment. Now, there are millions of channels there, which I already mentioned. If these channels are blocked, how do you clear that? If it is blocking the alimentary canal, it is easy enough, you can give an emetic, a purgative and clear it; but in these canals which are invisible, how do you clear them? So, as a creative imagination that is really how science begins, in that reasoning; that they had.

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TREATMENT BY MEDICAL PROCEDURES AND FORMULATIONS

- Blood letting is also an important medical procedure, less often used currently.
- The principle of the above procedures was stated by Vāgbhaṭa “doṣas which pervade the gut, tissues, body channels, limbs and bones are loosened by lubrication and liquefied by fomentation; they enter the gut to be eliminated by pacificatory/evacuative procedures”.

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So, here with that problem, according to Vagbhata, if you give this medicated oily substances, or ghee for example, in certain way, then that gets in, because there are communications between the alimentary canal and the body; this is a porous, bidirectional flow. So, this gets into the body compartment; it permeates through all these channels. It loosens these thick condensations of potions. And once they are, then you have this Turkish bath; the whole body is heated, and these oily substances which have loosened that, they all drift back into the (()) , and then, if it is the upper part of the

body, you give an emetic and get rid of it. If it is the lower part of the body, you can give enema, or you can give purgative and get rid of it. So, the toxic accumulations, you clear the system in this manner; that is how pancakarma is used.

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**TREATMENT BY MEDICAL
PROCEDURES AND FORMULATIONS**

- Medicinal plants used extensively in treatment from Atharva-vedic times.
- Charaka urges students to gain information on medicinal plants from shepherds and forest dwellers. Charaka Samhita refers to over 1900 medicinal plants in the making of formulations.
- Virtually all parts of plants were used in the making of formulations. Plants were classified into those yielding fruits, yielding flowers and fruits, creepers, and those perishing after fruiting.



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The medicinal plants, very extensively used; Charaka has 1900; not all of them have been identified. Animal and mineral products are used much less in Ayurveda, compared to, say Siddha system for example.

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**TREATMENT BY MEDICAL
PROCEDURES AND FORMULATIONS**

- Animal and mineral/metal products were used much less often.
- Preparation of formulations was a multi-stage process involving a number of plants and other ingredients. The stages were described elaborately and the final products made in 23 forms such as powder, decoction, lickables, paste, pills etc., to suit the patients.



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And the preparations, a multi-stage process and they are ultimately formed into many different forms, 23 forms; pills or paste and so on to suit different patients.

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TREATMENT BY SURGICAL PROCEDURES

- ❖ Surgery pioneered by Suśruta and extolled in Ayurvedic texts.
- ❖ Pre and post operative care described in detail. Analgesia during operations managed by wine; physical restraint used.
- ❖ Basic operative procedures divided into eight types; each described and applications indicated.

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Surgical procedures, extolled; is given, the first primary place in branches of Ayurveda and basic procedures are described, include incision, excision etcetera.

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TREATMENT BY SURGICAL PROCEDURES

- ❖ 100 blunt instruments and 20 sharp instruments described; their handling during surgery, storage etc. explained.
- ❖ Caustics and thermal cautery used widely.
- ❖ Common procedures were removal of foreign bodies incision and drainage of abscess and tapping for ascites; extensive description of reduction of fractures and dislocations.



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And caustics and thermal cautery are also included in this. And common practice was removal of foreign bodies and many other procedures like removal of urinary stone and so on.

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TRAINING IN MEDICINE AND SURGERY

Selection and Initiation

- Two systems operated in parallel in ancient India: Universities such as Takṣaśīla and Nalanda and the wide-spread centers for Gurukula type of training.
- Selection of students for training was rigorous: based on the physical, intellectual and moral attributes of the candidates; his prior education. Caste played an important role, Suśruta attaching more importance than Charaka.



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And training, the fundamental duty of a senior teacher, you have to train the next generation and there were two systems; one was the university system like Takshashila or Nalanda; the other was the Gurukula system which was much more national in character all over India. And the selection of student, selection of teachers, all these were extremely tight conditions, we will talk about it later. And the student had to have good liberal education before he came for admission; he had to major in a particular text, which he had to choose himself.

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TRAINING IN MEDICINE AND SURGERY

Selection and Initiation

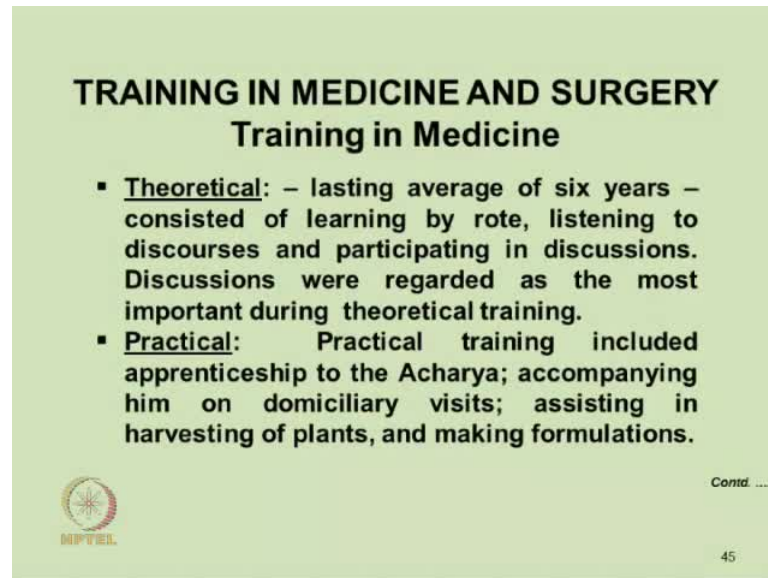
- Selection of a text for “majoring” was required.
- Initiation of a student was a sacred ritual when he was obliged to take an oath which covered his entire conduct – personal, academic, social and moral.



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And the initiation, unlike in modern medicine where the person takes an oath on graduation, here, he had to take an oath on admission for medical training which is a very elaborate oath covering all aspects of his life.

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TRAINING IN MEDICINE AND SURGERY
Training in Medicine

- **Theoretical:** – lasting average of six years – consisted of learning by rote, listening to discourses and participating in discussions. Discussions were regarded as the most important during theoretical training.
- **Practical:** Practical training included apprenticeship to the Acharya; accompanying him on domiciliary visits; assisting in harvesting of plants, and making formulations.

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Theoretical training and practical training. Training lasted on the average six years; practical training in surgery especially, you will see experimental models being used to, how to train a surgeon, how to do an incision, how to do a excision and so on, and special training in debate. These are for distinction students who wanted to become the Royal physician, who had a new doctrine to enunciate.

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TRAINING IN MEDICINE AND SURGERY
Training in Medicine

- Special training in debate was provided for those who wished to present their ideas or doctrines before a learned assembly for approval.
- Both theoretical and practical training were regarded as equally important like the two wings of a bird.




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For them, they had to undergo a special training in debate. And both theoretical and practical training were given equal importance.

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TRAINING IN MEDICINE AND SURGERY
Training in Surgical procedures

- ❖ Training in surgery was optional; limited to trained physicians who wished to follow “Dhanvantari school” in practice.
- ❖ Basic techniques (excision, incision, puncture, probing, extraction, drainage, suturing, bandaging, application of alkali and cauter, enema) were taught in models – perhaps the earliest example of experimental surgery.



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Those trained in only one, Susruta calls them, he is a one winged bird. And surgical procedures, I have already mentioned that, how these experimental models, familiar models were used to train students in this, so that, when he came to do the same procedure in a patient, he was already confident; he had a trained hand.

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TRAINING IN MEDICINE AND SURGERY

Training in Surgical procedures

- ❖ Completion of training was determined by the Acharya.
- ❖ Following completion of training, physicians and surgeons had to obtain Royal permission to do independent practice.




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SYSTEMATIZATION

- The process of systematization gave a structural framework to Ayurveda, which has survived the historical, cultural, political, and social events which shook India during subsequent centuries.
- Though historical events over centuries challenged the practice of Ayurveda which shows regional variations, the “basic structure” bequeathed by the ancient process of systematization maintained universal authority.
- Texts published in different regions and different languages of India adopt the same framework in teaching Ayurveda.




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And systematization, which I have covered, all the different aspects of Ayurveda, how all these fit into this pattern and how they have survived all these years, the different regions, great many social and political upheavals all over India, the whole systems have been changed, but these procedures, the way they have been put together, that system has not changed. That is the importance of systematization.

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BASIC STRUCTURE OF AYURVEDA THROUGH CENTURIES

- The firmness of the basic structure becomes evident from the positions taken by Charaka (1st century AD) and Vāgbhaṭa (6th century) in regard to doctrines, diagnosis and treatment of diseases, and techniques.
- Charaka's detailed discussions on philosophical themes such as pañcabhūta, guṇas on the basis of nyāya-vaiśeṣika, destiny, training of physicians etc., received little attention in Vāgbhaṭa. The abstract yielded to concrete.



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And the basic structure, therefore, if you compare doctrines, diseases and procedures from Charaka to Vagbhata, about six hundred years, I made a comparison of this, like treatment of tuberculosis for example, the only change that you find, is in the formulations that you are using, which would be different, because even regions, since Vagbhata was from Sindh, Charaka was from the northern India. So, the formulations cannot be the same, because medicinal plants will be different; resources will be different.

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BASIC STRUCTURE OF AYURVEDA THROUGH CENTURIES

- Ideas on causation, classical features, diagnosis, medical treatment of major diseases changed little from Charaka to Vāgbhaṭa. The changes were related mainly to the number and composition of medicinal formulations.
- Basic procedures such as pañcakarma showed little change except the frequency of the use of blood letting and the kind of formulations employed for evacuative procedures.



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So, other than those, in terms of basic doctrines, in terms of basic procedures like pancakarma, there is hardly any difference, in spite of the passage of centuries.

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**BASIC STRUCTURE OF AYURVEDA
THROUGH CENTURIES**

- Foundational doctrines such as pañcabhūta; division of Ayurveda into eight branches; causation of diseases based on adhyātmika, ādhibhautika, and ādhidaivika; śamana, śodhana, and pañcakarma in treatment all these remained immune to change from Charaka.
- What did change significantly was the decline in the status of surgery.



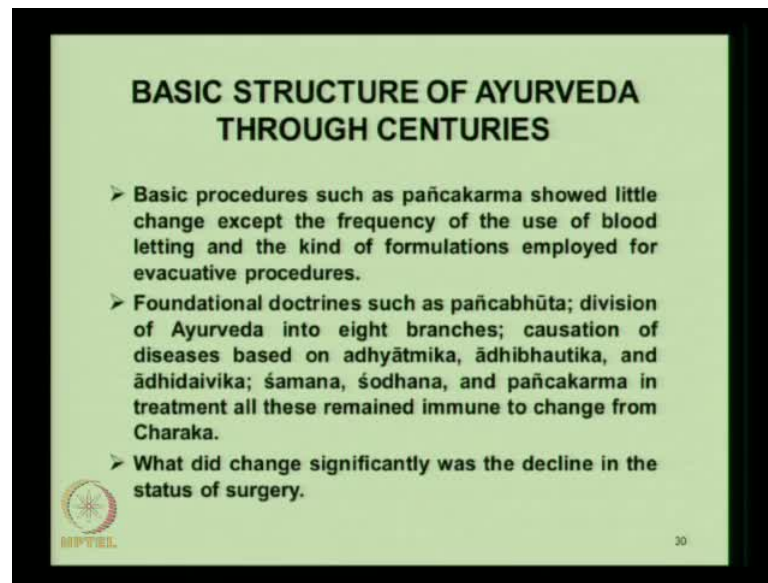
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So, one of the most important changes which happened during these years was the decline of surgery, which is a very serious subject; how in the first century, or earlier, surgery which was extolled, venerated, given the first place; but by the sixth century, it had lost its importance and its practitioners did not receive any respect. That is the major change which happened. Jeevaka's training in Takshashila was seven years; but six to seven years and the final, when the candidate was ready to practice medicine, that was left to the teacher; he had the last word.

(())

Yes.

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Once, he decided he was qualified to be an independent practitioner, then he had to get a license from the king. That was not only, even after getting that license, if a doctor was going to do a major operation, for example, a dead fetus, or an obstructed labor, it would be very dangerous, risk is very high, if he was going to do something like that, he had to give a special permission from the king to do that. In fact, Kautilya's Arthashastra, if a person is running a hospital without a royal license, permission, very severe punishment was given. Similarly, doctors' fraudulent practice.

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Even execution was a very major crime. That, university system like Nalanda, an invader would come and destroy us; same thing happened in Takshashila; libraries are burnt. So, the whole thing ceases to exist. But Ayurveda survived because these gurukulas, they could not be destroyed; thousands of them, all over India; that is how it survived.

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But in those days, the, especially the kind of, like this training in debate and so on, somebody had a new idea, he had to present it before an assembly; all kinds of questioning. And, if you read that section on debate, Charaka goes into such great detail; in hostile assembly, if you go there and they are all highly critical, how to face that, your adversary; and it goes into all kinds of politics; that adversary's weaknesses you should know ahead of this; is he weak in history; is he weak in speaking; all those, you should find out the weaknesses of adversary and attack them, all that he says.

So, the debate was a very important aspect which continued in India all through, even Shankaracharya's time, or Buddha's time; that convincing a person and changing it. And, Buddha did it very gently, very logically. In fact, in Buddha's dialogue, you will find once a Brahmin goes to invite him for a yatna in his house and he tells him, it is a very big yatna; hundred thousand animals will be sacrificed. So, it is very big.

So, Buddha listens to him, and talks to him very gently and finally, at the end of it, this man says, I do not want to do this. He changes him completely. So, Shankaracharya's debates with the Buddhists. So, like that, in medicine also the same thing happens. Somebody had a new kind of idea about a disease, or a treatment, he would have to establish that before an assembly, like a PhD thesis or something; learned assembly, there you have to debate. So, all these happened in those days.