REVIEW ARTICLE OF PITTAISHMARI W.S.R TO CHOLELITHIASIS

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ABSTRACT
Cholelithiasis (gallstone development) results from a blend of a few components, including super immersion of bile with cholesterol, quickened nucleation of cholesterol monohydrate in bile, and bile balance or postponed gallbladder purging because of disabled gallbladder motility. In India it is progressively normal in ladies in north, upper east and east when contrasted with different zones in the nation. The infection Gall Stone has not been depicted straightforwardly in Ayurvedic works of art. The word Ashmari in Ayurveda represents stone which is portrayed distinctly with regards to Bastigat Ashmari (urinary calculi). In the wake of investigating the Ayurvedic writings it was discovered that the bile emitted from nerve bladder can relate to Accha Pitta referenced in Ayurveda because of the similitude in area and capacity. The pathogenesis of the sickness happens because of the irregular arrangement of Kapha during the procedure of processing and its vitiation due to Vata. The present article manages portrayal of arrangement of nerve stone from the Ayurvedic point of view. Alongside this the solution for nerve stone as per Ayurveda is likewise depicted.

Keywords: Cholelithiasis, Pittashmari, Bigol, Shashwat

INTRODUCTION
Ayurveda, truly outstanding and conventional human services frameworks of Indian beginning, endeavours to concentrate on comprehensive wellbeing the board, both anticipation and relieving of infirmities. It is more fit to Indian human brain science than present day social insurance framework. Cholelithiasis (gall bladder stone) is a crystalline solidification framed inside the nerve bladder by growth of bile parts. Cholelithiasis is one of the predominant and rich gastroenterological issues. It has a place with the gathering of complex metabolic ailment that influence human, and its basic pathogenic system are not all around characterized. The predominance of cholesterol cholelithiasis in Western nations is around 10-20% and consistently 1-3% of individuals create nerve stones. An epidemiological investigation shows that in India commonness of cholelithiasis is about 4%. It is uncommon in initial two decades; Occurrence progressively increments following 20 years. It arrives at farthest in fifth and sixth epochs. A gall bladder stone fluctuates extensively in different networks in India, the North Indians having 2-4 crease higher inescapability as contrasted and those among South Indians. Ladies are influenced more than men,
and the proportion is 4:1. It is said that the gallstones are more in fat, prolific, forty and female.¹ There is no proof of pittasaya ashmari in the antiquated Ayurvedic settlements. It is clearly referred to in Ayurveda that putting of exact classification of a bug isn't constantly conceivable and that can be evaluated, analyzed or oversaw by savvy doctor thinking about the Dosha, Dhatu, and mala hypotheses. The ailment which had not been referenced in Ayurvedic works of art is opined by the researcher how to oversee them.²

Acharya Sushruta explicitly demonstrates Paneeya Kshara in the administration of Ashmari and the Kshara because of its ksharana property can without much of a stretch disintegrate Ashmari.

Historical Review

Vedas are the most established composed tributes accessible to humanity on this planet. A lot of therapeutic uses have been identified in these bona fide writings. Be that as it may, there is no depiction of Kshara in Vedic writing. In Upanishada, the utilization of word Kshara is found yet nothing has been depicted in detail.

Just Sushruta has devoted a part to Kshara. He has described Kshara considering its extension in Shalya Tantra because of its characteristics like Chhedana, Bhedana, Lekhana and so on. Thus, in the time of Samhita, Charaka has managed definition, assortments, properties and utilization of Kshara. Charaka has referenced two sorts of Kshara arrangement. In first section of Vimana sthana, definition, general properties and unfavourable impacts of Kshara are mentioned. He has likewise indicated that Kshara doesn't have a solitary Rasa, however it has numerous Rasas in light of the fact that it is a Dravya arranged from different medications and comprise all rasas with the exception of Amla rasa.

Aside from that, in careful depiction likewise, Kshara has been referenced as "Shastra pranidhana" Dalhana, the prominent pundit of Sushruta Samhita clarified the word 'Ksharana' as one which prepares and evacuates the disfigured substance, skin and so forth and furthermore expels the vitiated Doshas from their area.³

Causes of gall stone formation⁴
- High caloric and high fat diet
- Obesity - normal bile acid pool and secretion but increased biliary secretion of cholesterol.
- Weight loss - prolonged fasting causes gall stone formation. Mobilization of tissue cholesterol leads to increased biliary cholesterol secretion while enterohepatic circulation of bile acids is decreased.
- Female sex hormones – a. Estrogen stimulates hepatic lipoprotein receptors, increased uptake of dietary cholesterol and increased biliary cholesterol secretion. b. Natural estrogens, other estrogens and oral contraceptives lead to decreased bile salt secretion and decreased conversion of cholesterol to cholesterol esters.
- Increasing age – increased biliary secretion of cholesterol, decreased size of bile acid pool, decreased secretion of bile salt.
- Gallbladder hypo motility leading to stasis and ormation of sludge, which is due to a. Prolonged parenteral nutrition b. Fasting c. Pregnancy d. Drug such as Otreotide
- Drug induced - Increased biliary secretion of cholesterol due to Clofibrate therapy.
- Genetic factors - as per modern science genetic factors accounted for 25%.
Probable Samprapti of Pittasaya Ashmari

Kapha prakopa ahara and viharas

Accumulation of kapha in pittasaya

Kapha – pittasansarga

Biliary sludge formation

Srotorodha

Provocation of vata by its rukshadi gunas

Varta swarupa

Pittasaya Ashmari

Ashmari vis via Pittasaya Ashmari and its reason:

Dalhana while commenting on the Samprapti of Ashmari, person who does not undergo purification regularly and who indulges in unhealthy foods and activities, kapha gets aggravated and united with urine and forms Ashmari. Dalhana makes a comment that Ashmari will be “Na Eka Desha” that means Ashmari will not be present in only one place wherever it forms it is called as Ashmari only. In this context instead of combining with urine it gets combine with pitta with the help of vata it forms Ashmari in the pittasaya. So, this can be considered as pittasaya Ashmari. Acharaya Susruta explains Ashmari will starts forming from the childhood itself and gave the reason also. Likewise, we can correlate with the same for pittasaya i.e. Alpa mukha, Anupachith mamsa. Colour of the pittasaya Ashmari can be compared with pittaja ahmari in which “Sa Raktha peetavabhasa krushna” has been said. Where the colour of the cholesterol stones will be yellowish whereas pigmented stone will be in blackish in colour.

Probable upadrava can be made as from the pittasaya mukha----Pittapraseka (bile)---- Ashayik pitta nalika (Cystic duct) ---- pakwashaya ---- passes through mutrasaya. While considering the pathogenesis of gall stone on Ayurvedic parlance, it can be said that the kaphaprakopaka Nidanasevan (causative factors) leads to accumulation of Kapha at first, which produces the symptoms like Alasya (lethargy), Gaurav (heaviness), Mandoshmata (decreased digestive fire). In Pittashaya (gall bladder) quantitatively accumulated Kapha mixes with the Pitta already present in it. The mixture of Kapha and Pitta in Pittashaya leads to the formation of viscous material (biliary sludge) causing obstruction in the passage of Vayu. Hence the Vayu gets vitiated by its Rukshadi gunas and converts the viscous material into dry and solid form (Vartaswarupa) called as Pittashmari (gall stone). Dalhana while commenting on the Samprapti of Ashmari, person who does not undergo purification regularly and who indulges in unhealthy foods and activities, kapha gets aggravated and united with urine and forms Ashmari. Dalhana makes a comment that Ashmari will be “Na Eka Desha” that means Ashmari will not be present in only one place wherever it forms it is called as Ashmari only. In this context instead of combining with urine it gets combine with pitta with the help of vata it forms Ashmari in the pittasaya. So, this can be considered as pittasaya Ashmari. Acharaya Susruta explains Ashmari will starts forming from the childhood itself and gave the reason also. Likewise, we can correlate with the same for pittasaya i.e. Alpa mukha, Anupachith mamsa. Colour of the pittasaya Ashmari can be compared with pittaja ahmari in
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Accha Pitta vis-à-vis bile:
The Accha Pitta generated in the second stage of digestion bears striking similarity with bile which is stored in gall bladder. Hence the gall bladder can be named as ‘Pittashaya’. Daily basal secretion of hepatic bile is around 500 – 600 ml. which promotes digestion and absorption of dietary fat, eliminate certain catabolites (including bilirubin), emulsify the fat soluble vitamins to enable their absorption, acts as bactericides destroying many of the microbes that may be present in the food. According to Ayurveda, all these functions are like Pachan Karma of Accha Pitta. Moreover, the two enzymes produced from bile viz. stercobilin and urobilin gives the normal colour to the faeces and urine respectively. This function is nothing but the Ranjan Karma of Pitta i.e. to give the Prakrit Varna to Purisha and Mutra. Acharya Sushruta has mentioned ‘Pitavabhasata’ as one of the symptoms of Pittasanchaya (accumulation of Pitta). Pittavahasata indicates the yellowish appearance of the body which according to modern science is due to the increased secretion of bile. Hence the Achha Pitta can be considered as bile based on similarity in location, functions and abnormality. This Achha Pitta is generated form liver and stored in gall bladder; hence the gall bladder is considered as Pittashaya.6

Mechanism of gall stone formation
According to modern science there are 3 stages of gall stone formation which can be explained from Ayurvedic point of view as below.
Bile Super Saturation with cholesterol (Vikrita Kaphasanchiti)
The most important factor in gall stone formation is increased biliary secretion of cholesterol. This may occur in association with
✓ Obesity
✓ High caloric and cholesterol rich diets
✓ Increased hepatic uptake of cholesterol from blood7
Kayagni is mainly concerned with chemical processes involved in gastrointestinal digestion. Generally, digestion of food materials in the Aamashaya and Pachyamanashaya corresponds to the gastric and intestinal digestion. Special digestion relates to humoral or hormonal mechanism located in duodenal mucosae which are responsible for exciting the secretion of the digestive juices – gastric, pancreatic and hepatic – necessary for insuring intestinal digestion. This correlation will become further amplified by taking into consideration few more observations made by Charaka. He has made a pointed reference of digestion process as Awasthapaka.8
According to Awasthapak, in the first stage of digestion the food becomes Madhura which causes the stimulation and formation of Kapha. If a person having hypo function of Kayagni consumes more Kaphaprakopak Ahara then ultimately the Kapha production in the first stage will be more. The Kapha having more quantity and abnormal consistency here can be considered as Aam Kapha (abnormal Kapha). This Aam Kapha then mixes with the Ahararasas and circulates throughout the body with the help of Vyana Vayu.9
Such Ahararasas produces impediment (sanga) in the Srotasas due to the presence of Aam Kapha in it, leading to ailment. If there is Khavaigunya in Pittashaya then this Aam kapha gets stuck (chaya) init. By virtue of this the nourishment to subsequent Dhatu is ceased. Acharya Sushruta has mentioned ‘Mandoshmata’ as one of the symptoms of Kaphasanchaya (amassing of Kapha). Mandoshmata indicates the reduced digestive function at both levels i.e. Jatharagni and Dhatwagni. So, it might indicate the impaired fat metabolism in the biliary system due to which there is saturation of cholesterol.10 Nucleation of cholesterol monohydrate with subsequent crystal retention and stone growth (Kaphapitta sansarga). While super saturation of bile with cholesterol is an important prerequisite for gall stone formation, it is generally not enough by itself to produce cholesterol precipitation in vivo. Most people
with super saturated bile do not develop stones because the time required for cholesterol crystals to nucleate and grow is longer than the time bile spends in the gall bladder. As per kalasamprapiti mentioned in Ayurvedic texts, a prolonged and abnormal second stage of digestion (Dwitiya Avasthapaka) accelerate the nucleation of cholesterol monohydrate crystal due to which bile spends more time in gall bladder allowing the Aam Kapha to concentrate, supersaturate and nucleate leading to the cholesterol crystal formation. In human lithogenic Bile, the nucleation of cholesterol monohydrate crystals is greatly accelerated. This acceleration of cholesterol monohydrate in bile may be due to deficiency of antinucleating factors. As mentioned earlier, as there is a formation of Aam kapha in the first stage of digestion, subsequently the second stage is also affected in which the pitta produced is unable to perform its normal functions as it comes direct in contact with Aam kapha. This phenomenon is somewhat like the deficiency of anti-nucleating factors and accelerated nucleation of cholesterol monohydrate crystal. Abnormal gall bladder motor function with delayed emptying and stasis (Margavarodhajanya Vataprakopa). A third important mechanism in cholesterol gall stone formation is gall bladder hypo motility. The stone will not be able to grow, if the gall bladder empties all super saturated or crystal containing bile. A high percentage of patients with gall stones exhibit abnormalities of gall bladder emptying. It correlates with Vataprakopa. At the end of second mechanism Pittasansargita Kapha which is in abnormal consistency is like biliary sludge. This sludge becomes obstacle in the passage of vayu leads its provocation. When Vayu gets vitiated and provoked, it produces the symptoms like Sransa, Vyasa, Vyadha, Sanga etc. In the present context of gall stone, the term Sransa can be taken as functional lethargy of gall bladder whereas Vyasa can be considered as dilatation of gall bladder leading to increased gall bladder volume. Vyadha and Sanga can be correlated with pain and obstruction causing improper emptying of gall bladder respectively. All these lead to increase in the residual volume. As pathogenesis goes on, because of increased residual volume, Vayu gets provoked due to the obstruction in its passage. Hence the Ruksha, Khara, Vishad and Laghu Gunas of vitiated Vayu convert the sludge into Varta swarup (dry form) called as gall stone. Obstruction in its passage, hence the Ruksha, Khara, Vishad and Laghu Gunas of vitiated Vayu convert the sludge into Varta swarup (dry form) called as gall stone.

**DISCUSSION**

It is very much surprising that the malady Pittasaya Ashmari has not been mentioned in both Vedic and Samhita kalas. Rather than that, scattered indirect references can be seen which can be correlated. Establishment of pittasaya in Ayurveda is a challenging task where two different concepts have been used. The polemic of gallbladder in Ayurveda with respects to its name, structure as well as location by the different acharyas. Some of the glimpses in ancient texts are as follows.

**Acharya Susruta** who is known to be a Father of Surgery describes about Ashayas which is nothing but the potential space for the location of organs. According to Susruta, there are sapta Ashayas in which Pittasaya is one among them. According to Sharangadhara Samhita, instead of pittasaya he has mentioned agnyashaya which is inside the pakwashaya. The exact location of pittashaya is quiet controversial. According to Astanga sangraha while describing the garbhasaya it is situated between pittasaya and pakwashaya. So from the above references the location of gallbladder can be taken as pittasaya. There are many synonyms for gallbladder as pittasaya, pittakosha, kloma, tila. There were no tools to compare accurately so that it was given a major importance and it was explained in short. Acharya Charaka and vagbhata has included kloma as one among the kostangas. Susruta has mentioned that kloma is situated below kalakhanda on the right side.
and it is popularly known as tilaka. acc. To Adhamala kloma is situated near the liver and it is known as tila8. Acc. to Kasypa Samhita, kloma is present right to the hrudaya. The Accha pitta generated in the second stage of digestion bears striking similarly with bile which is stored in gallbladder. Hence gallbladder can be named as Pittasaya. From the above points, we can conclude the fact presented above that the Notion of pittasaya is already laid in Ayurveda, but it is labelled morphologically with liver. So however, kloma, tilaka may be considered as gallbladder. Kloma would be considered along with the liver that might be the probable reason that’s why it has not been mentioned separately. Acc. To Susruta, Pittavabhasata as one of the symptoms of Pita sanchaya. Here it indicates the yellowishness of body. Hence can be considered as a bile based on similarity in location, function, and abnormality. This Accha pita is generated from liver and stored in gallbladder. So that Gallbladder stores pita (Bile), hence the organ can be considered as pittasaya and stone formed can be considered as Pittasaya Ashmari. Another interesting factor Why Acharya Susruta has not consider it as a major factor is that while discussing about the Samprapti of kukshi shoola due to the nidana the aggravated vata invades the agni then the undigested food stays for long time without digestion then the patient will not feel comfort in any position, breaths with difficulty, and often has pain. So, when you compare with the pain at the hypocondric region, this kukshi shoola can be consider because of its symptoms. He has considered it as a pain So it might be a cause Acharya Susruta has not mentioned it as a major form of disease. There is no specific nidana has been mentioned in any ayurvedic texts regarding the pittasaya Ashmari. So, a try has been made to attempt with doshas related Nidana such as guru anna and panna, ahita ahara and vihara, ati prayoga of kapha vrudhhi ahara and vihara. Due to the nidana sevana the kapha gets accumulates first which produces symptoms like aalsya, Gaurav, mandoshmata. Already there will be presence of kapha in pittasaya. now the mixture of kapha and pitta in the pittasaya leads to the formation of biliary sludge causing the obstruction in the passage of vayu. Hence the vata gets vitiated by its rukshadi gunas and makes ruksha in the pittasaya and forms vartaswarupa which formed as pittasaya Ashmari.

**CONCLUSION**

The Accha Pitta can be considered as bile on the basis of similarity in location, function and abnormality. This Accha Pitta is generated from liver and stored in gall bladder; hence the gall bladder is considered as Pittashaya. The most important factor in gall stone formation is bile super saturation with cholesterol which can be correlated with Vikrit Kaphasanchitri in Pittashaya as per Ayurveda. The phenomenon of deficiency of anti-nucleating factors and accelerated nucleation of cholesterol monohydrate crystal is somewhat similar to Kapha-pitta Samsarga. The third mechanism i.e. gall bladder hypo motility can be correlated with Margavarodhajanya Vataprakopa.

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