A STUDY ON EFFICACY OF PRACHANNA AND BHRINGARAJA LEPA IN THE MANAGEMENT OF KHALITYA (HAIRFALL)

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ABSTRACT

Introduction: Hair fall is a common problem with both men and women. In *Ayurveda* it is explained by our Acharyas as *Khalitya* (hair fall) and it is one among the **Kapalagata Roga**. Some experiences less hair fall while it is acute with others. This is essentially a cosmetic disorder other than affecting patient psychologically. The disorder is significant because it allows ultra violet light to reach the scalp and thus increase the amount of actinic damage. There is gradual conversion of terminal hair into intermediate hairs and finally to vellus hair. Normal hair break up is about 50-100 strands per day. Though, it is replaced by new ones, however, aging, hereditary and hormonal changes contribute permanent loss of hair. **Need for the study**: Universally, hair fall is an extremely common disorder that affects roughly 50% of men and perhaps, as many women older than 40 years. **Objectives:** The Objective of the study is to evaluate the efficacy of *Prachanna* and *Bhringarajalepa* in *Khalitya* (Hair fall). **Study design:** This study was taken in the Department Of **Shalakya Tantra**. This work was carried out on 60 patients for 60days who were selected from OPD and IPD of SDMIAH, Bengaluru. **Conclusion**: *Prachanna* is one among the *ShastrakritaRaktamokshana* in which multiple small incisions are made to detoxify the impure blood and to facilitate re-growth to treat hair fall. It also helps in weak roots, damaged hairs, receding hairline, in stimulating and nourishing the hair follicles for hair growth with minimal risk of irritation and allergies. Although various treatments are available for hair fall like, topical hair and scalp preparations, hair transplant surgery which is widely used for prevention and treatment of hair fall but it causes permanent tissue atrophy and denatures cellular elements.[17]so the present study was designed and conducted in the Department of **ShalakyaTantra**.

Keywords:*Prachanna*- Type of Bloodletting, *Bhringaraja*- medicinal plant, *Kapala*- scalp.

INTRODUCTION

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Hair fall is a common problem with both men and women. Some experiences less hair fall while it is acute with others. Andro Genetic Alopecia (AGA) is the most common cause of hair loss among males.[5] In the Indian context, a population based study of 1005 subjects showed a 58% prevalence of AGA Male Androgenetic Alopecia- male type baldness in males aged 30-50 years.[6] In this type Hair is lost in a well-defined

pattern, beginning above both temples. Over time, the hairline recedes to form a characteristic "M" shape. Hair also thins at the crown (near the top of the head), often progressing to partial or complete baldness[4].

The pattern of hair loss in women differs from male-pattern baldness. In women, the hair becomes thinner all over the head, and the hairline does not recede. Androgenetic alopecia in women leads to total baldness. The rapid increase in the proportion of people suffering from hairfall could be attributed to the lack of wholesome dietary habits and erratic life style mode of not following the principles of *Sadvritta, Dinacharya*or *Ritucharya* either due to illiteracy of the subjects or due to the faulty interpretation. There are various treatments available for hairfall such as, topical hair and scalp preparations, hormonal therapies, and hair transplant surgery. All these treatment methods are widely used for prevention and treatment for hair fall but they cause many adverse effects.

Khalitya (hair fall) is one among the *KapalagataRoga*[3] as explained by *Vagbhata*. *Madhavakara* explained *Indralupta, khalitya* and *ruhya*as as synonyms. According to *Kartheeka,* scalp hair fall is known as *khalitya,* body hair fall is *ruhya* and hairfall of moustaches is *Indralupta.* The hairfall is of sudden onset in *Indralupta*and gradual in *Khalitya* as per *Vagbhatta*[2]. In *Khalitya, vata*and *pitta doshas* causes hairfall, *kapha* and *rakta* obstructs the hair roots[2]. *Chakrapani*on *charakachikitsa* mentioned that *tejas* of *pitta dosha*by involving *vatadidosha* when scorches up the scalp, results in *khalitya. Videha* in *sushrutanidana* 13th chapter, interprets that *khalitya* occurs in men only not in women[1].

Androgenetic alopecia (AGA) is considered to be the most common type of baldness characterized by progressive hair loss[7]. The evolution of baldness progresses from thinning in the temporal areas producing a reshaping of the anterior part of the hairline (temporal recession), then on to the loss of hair from the vertex region[8]. The typical pattern of male baldness begins at the hairline. The hairline gradually moves backward (re-

cedes) and forms "M" shape. Eventually the hair becomes finer, shorter, and thinner, and creates a U- shaped (or horse shoe) pattern of hair around the sides of the head.

Langhana and *Brimhana* are the two basic modalities of treatment for *Santarpana* and *Apatarpanajanya* disorders respectively. *Shodhana* and *Shamana* are two varieties of *langhana.* The procedure which takes out the *doshas* form the nearest route of its vitiation is considered as *Shodhana. Vamana, Virechana, Shirovirechana, Nirooha* and *Raktamokshana* are five types of *Shodhana. Raktamokshana* is the only *shodhana* procedure where the vitiated *doshas* are taken out from the *shakas* itself by creating an artificial route. *Raktamokshana* has its importance in both *shodhana* as well as in Para surgical procedures. *Prachanna* is one among the *shastrakritaraktamokshana* in which multiple small incisions are made in wide area to irrigate the impure blood. Here we have taken it as the pre therapy to *Lepa* to enhance the efficacy of *Lepa. Sushruta* and *Vagbhata* has focused on the *Raktamokshana* in detail. In *Sushruta Samhita* and *Ashtangasangraha*, we get separate chapters on *Siravyadha* and *Jalaukavacharana. Charaka,* the celebrated physician of ancient school of medicine, also gives brief description on this topic.

Bhringaraja literally means that which bestows hair. As *Bhringaraja is* having *keshya* property it was taken for *lepa* mixed with water for applying over the head. *Bhringaraja* having *katu, tikta* rasa and *laghu, ruksha*guna, properties it balances *kaphadosha; while its*sushnaveerya balances *vata.*[11]

Objectives of the study:

- To evaluate the efficacy of *PRACHANNA* in the management of *KHALITYA.*
- To evaluate the efficacy of *PRACHANNA* and *Bhringaraja Lepa* in the management of *KHALITYA.*

METHODOLOGY:

Source of data:

Patients of Hair fall attending the outpatient and inpatient of Shalakya Department of S.D.M

INSTITUTE OF AYURVEDA AND HOSPITAL, BENGALURU were being   selected for the study randomly.

Method of Collection of Data: A total of 60 cases that fulfils the clinical features were randomly selected irrespective of sex, religion, economic status, and marital status.

Inclusion Criteria
* Patients having the clinical features of hair fall occurring anywhere in the scalp.
* Patients with lesion of duration less than 2yrs
* Patients having age group 16 to 60 years.
* Patients of either sex.

Exclusion Criteria
* Patients with other form of Alopecia areata like Alopecia totalis and Alopecia universalis.
* Alopecia due to other scalp disorders like Tineacapitis, Trichotillomania, Tillogen effluvium and Traumatic alopecia.
* Patient with endocrine disorders.
* Abnormal Clotting Time and Bleeding Time.
* Patients suffering from other systemic disorders, which may affect the study adversely.

STUDY DESIGN

Treatment Group**:** 60 patients with the classical features of *khalitya* were selected and randomly divided into the following two groups each comprising 30 patients.

Duration of treatment: 60 days (8 sittings)

1st three days were for evaluation and   screening of patient for the study. Consent form in their own languages was taken from each patient before the study. As *poorva karma, swedana* with hot water was given   before *prachanna.* As *pradhana karmaprachanna* was done in Group A, and *prachanna* followed by *Bhringarajalepa* application in Group B. Small incisions/pricks were done over the site of vitiation; incisions were taken in such a pattern that they are   parallel to the vessels beneath and not too deep or shallow. As *paschat karma* area was cleaned with warm water in Group A,   *shirolepa* with *Bringarajachurna* 30 grams mixed with water sufficient quantity was   applied on scalp for 1 hour in Group B. Weekly once treatment with the gap of 7days for 8 sittings

Follow-up: every 15days once for 2 months (4 visits)

Table-1: Showing Study Design of Group A & B

Group	*Chikitsa*	*Prayoga Avadhi*	*NireekshanaAvadhi*
A	*PRACHANNA*	1day with a gap of 1week for 60days, both inclusive (8sittings)	2months
B	*PRACHANNA* AND *LEPA*	1day with a gap of 1week for 60days, both inclusive (8sittings)	2months

Procurement and Preparation of the Drugs:

The *Bhringarajachurna* was prepared from dried whole plant in the *Shalakya* Preparation Room in SDMIAH, Bengaluru. Needle size 26.5mm was procured from MMP pharmacy, Anchepalya, Bengaluru.

Assessment Phase

The effect of treatment was assessed on the basis of both subjective and objective   parameters.

Assessment criteria:

SUBJECTIVE PARAMETERS:
* Growth of hair
* Amount of noticeable new hair
* Visibility of the scalp
* Rate of hair loss

OBJECTIVE PARAMETERS:
* **Scalp Photography Visual aid**   (Olsen/Canfield) for estimating percentage scalp hair loss:-
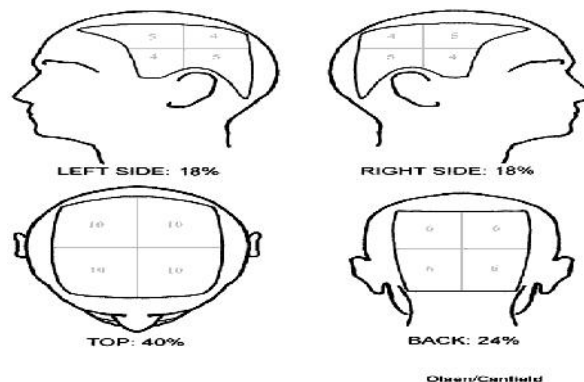
Criteria for measuring extent of Hair loss and Hair growth

The proportion of scalp involvement is determined by dividing the scalp into 4 quadrants and estimating the percentage of scalp surface that all alopecia areas will occupy if placed together. The following groups will be used:

S= Scalp Hair loss

S_0=No Hair loss

$S_1 =_{\leq}$ 25% Hair loss

S_2=26%-50% Hair loss

S_3=51%-75% Hair loss

S_4=76%-99% Hair loss

S_5=100% Hair loss

- **Daily Hair counts**

Daily scalp hair counts can be useful to the physician to help quantify how much the patient is losing and make sure that this is not more than the physiologic hair loss. It is said that it is normal to lose up to 100 hairs per day. Patients are instructed to collect hairs shed in one day, count them and place them in plastic bags. All shed hairs in the shower or sink or on the brush are collected. Daily hair counts for 7 days are maintained. It is expected to lose more hairs on shampoo days.

- **Hair wash test**

In the wash test, the patient refrains from shampooing for 5 days and then he/she shampoos and rinses the hair in the basin with the hole covered by gauze. The hairs remaining in the water and the gauze are collected and counted.

- **Butter paper analysis:**

Assessment was done based on butter paper analysis. Before treatment the area of lesion was marked on to a butter paper, then after treatment the lesion is marked again. Then area of the lesion is calculated based on the shape of the lesion with appropriate corresponding formula (Square, Rectangle, Triangle, and Circle). If the lesion does not correspond to any of the above said shapes then small squares are imagined and respective areas are calculated.[18]

- Hamilton classification[12] and Norwoods' classification[13] was used for grading of male AGA.

Criteria for Assessment of Overall Effect

Overall effect of the therapy was assessed in terms of complete remission, marked improvement, moderate improvement, and mild improvement and unchanged. It was observed by adopting the following criteria.

- Complete Remission: 100% relief in Chief complaints and no recurrence during follow up study were considered as complete remission.

- Marked improvement: 75 – 99% improvement in chief complaints is recorded as marked improvement.

- Moderate improvement: 50 - 74% improvement in chief complaints is recorded as moderate improvement.

- Mild improvement: 25 - 49% improvement in chief complaints is considered as mild improvement.

- Unchanged: Less than 25% reduction in chief complaints

- Recurrence: similar extent of severity of symptoms was noted as recurrence.

OBSERVATIONS AND RESULTS

Sixty patients were selected and divided into 2 Groups (Group A and B) containing 30 patients in each. Group A was treated with *Prachanna* and GroupB with *Prachanna* and *BhringarajaLepa.*

Subjective and objective changes were considered for the assessment of the efficiency of research work.

DEMOGRAPHIC DATA

Table-2: Showing Demographic data of 60 patients of *Khalitya*

		Total No of patients	Percentage (%)
1. Age in years	Less than 30 years	43	71.66
	More than 30 years	17	28.33
2.Sex	Male	54	90
	Female	06	10

3. Religion	Hindu	57	95
	Muslim	03	05
	Christians.	00	00
3. S – E Status	Upper class	04	6.66
	Middle class	43	71.66
	Lower class	13	21.66
4. Habitat	Urban	03	5
	Suburban	39	65
	Rural	18	30
5. Dietary Habit	Vegetarian	14	23.33
	Mixed	46	76.66
6. Marital status	Married	19	31.66
	Unmarried	41	68.33
7. Duration of Hairfall	Up to 1 year	13	21.66
	2 years	33	55
	>_3 years	14	23.33
8.Associated Symptom	No symptom	26	43.33
	Single symptom	22	36.66
	More than one symptom	12	20
9.Hairfall percentage before treatment	25%	26	43.33
	26-50%	22	36.66
	51-75%	12	20

Data related to Response
RESULTS

Table 3: Showing Individual study of the parameters in Group A

Parameter	Average		Differ	% of differ	SD	SE	df	T value	P value	Remarks
	BT	AT	(d)	% d						
SP (Scalp Photography)	1.46	0.56	0.84	57.53	0.5040	0.09202	29	6.158	<0.0001	HS
DHC (Daily Hair Counts)	1.76	0.90	0.86	48.86	0.5477	0.1000	29	9.000	<0.0001	HS
HWT(Hair Wash Test)	1.3	0.93	0.37	28.46	0.4498	0.08212	29	11.366	<0.0001	HS
BPA (Butter Paper Analysis)	1.26	0.96	0.3	23.80	0.4138	0.07556	29	12.794	<0.0001	HS

Table 4: Showing Individual study of the parameters in Group B

Parameter	Average		Differ	% of differ	SD	SE	df	T value	P value	Remarks
	BT	AT	(d)	% d						
SP	1.43	0.83	0.57	39.86	0.5307	0.09689	29	8.601	<0.0001	HS
DHC	2	1	1	50	0.6948	0.1269	29	7.883	<0.0001	HS
HWT	1.56	0.7	0.86	55.12	0.5350	0.09767	29	7.167	<0.0001	HS
BPA	1.16	0.86	0.3	27.27	0.4342	0.07927	29	10.933	<0.0001	HS

INTER GROUP COMPARISON

Table 5: Comparison of effect of treatment on Parameters in "Group A" and "Group B"

Parameter	Group	Mean	% of differ	SD	SE	T-Value	P-Value	Remarks
SP	A	0.84	57.53	0.5833	0.1065	2.504	<0.01	S
	B	0.57	39.86					
DHC	A	0.86	48.86	0.6618	0.1208	0.4146	>0.05	NS
	B	1	50					
HWT	A	0.37	28.46	0.7279	0.1329	1.756	>0.05	NS
	B	0.86	55.12					
BPA	A	0.3	23.80	0.6074	0.1109	0.9017	>0.05	NS
	B	0.3	27.27					

Table 6: Comparison of Overall Reduction of Hair fall between the Groups A and B.

Group	Average Mean	% of Success Rate
A	0.607	60.7
B	0.69	69

Comparison of overall average mean value in Group A was 0.607(60.7%) of success rate of improvement and in Group B was 0.69(69%) of success rate of improvement.

Table 7: Overall assessment of improvement

Overall Assessment of Improvement	Group A Patients	Group B Patients
Unchanged	0	0
Mild Relief	15	17
Moderate Relief	11	11
Marked Relief	1	0
Complete Relief	2	3

DISCUSSION

In every research work, discussion part is most important because it brings into light - about the logical analysis, reasoning and rational interpretations to ignite new ideas, which are helpful in filling the research gaps in the scientific world. Hence, here is an attempt to discuss the concepts, observations and experiences in the clinical study.   Universally, hair fall is an extremely common disorder that affects roughly 50% of men and perhaps, as many women older than 40 years. As many as 30% of premenstrual women reportedly have some evidence of hair fall. This is essentially a cosmetic disorder other than affecting patient psychologically[1]. The disorder is significant only in that it allows ultra violet light to reach the scalp and thus increase the amount of actinic damage. There is gradual conversion of

terminal hair into intermediate hairs and finally to vellus hair. **Prachanna** is a method of *shastrakri-taraktamokshana*. *Prachanna* is performed as a treatment modality to detoxify the vitiated blood and is usually adopted as a *sthanikachikitsa*. Small incisions are taken over the site of vitiation; incisions are taken in such a pattern that they are parallel to the vessels beneath and not too deep or shallow. Precautions are to be taken to avoid the procedure over *sandhi, marmas* or vital organs as it may cause fatal outcomes if done on such sites. *Prachanna* Karma and *Lepa*have been described in classical texts of Ayurveda. In classics while explaining types of *Raktamokshana*, it has been explained that *Prachanna* is ideal method of *Raktamokshana* in management of *Raktajavikara*. In this study 60 patients of *Khalitya* were treated by randomly dividing them into two groups each comprising of 30 patients. Patients of one group were subjected to *Prachanna* and the patients of the other group were first subjected to *Prachanna* and then *Lepa.*

Majority of the patients included in the study were found to be involved with physical strain (40%), followed by 17% exposed to intense sunlight, 10% each exposed to improper diet, *Divaswapna*, smoking, exposure to dust and 3 % patients had mental stress. Physical strain, exposure to intense sunlight, improper diet, all these regimens vitiate *vatadosha* which further vitiates other *doshas* and *rakta* causing *khalitya*. Out of 60 patients 43(71.66%) patients were in the age group of 30 years and 17 (28.33%) were in the age group above 30 years; 54 (90%) patients were male and 06 (10%) were female.

Socio-economic status wise distribution of patients showed that maximum (71.66%) belonged to middle class followed by 21.66% belonged to Lower class and 6.66% belonged to Upper class. Dietary Habit wise distribution of patients shows that 76.66% were mixed and 23.33% were having Vegetarian Dietary Habits. Habitat wise distribution of patients showed that maximum of 65% were residing in Sub urban area followed by 30% in Rural and 5% were residing in urban area.

Marital state wise distribution showed that 68.33% were Unmarried and 31.66% were married. Out of 60 patients, 13(21.66%) patients were with duration up to 1year, 33 (55%) patients of 2 years, 14(23.33%) patients were having duration of 3 years. Out of 60 patients, 26 (43.33%) patients were having no associated symptoms, 22 (36.66%) patients were associated with single symptom, dandruff and 12 (20%) patients were associated with more than one symptom like itching, dandruff and greying of hairs.

Overall Effect of Therapy:

In Group A, the highly significant (P<0.0001) reduction of Hair fall of 60.7% was noted after the treatment. In Group B, the reduction of Hair fall of 69% was noted and it was also highly significantly p value <0.0001.

This data shows that effect of *Prachanna*with *Lepa* is more effective than *Prachanna* alone which justifies *Susrutha's* statement that *Prachanna* improves the efficacy of *Lepa.*

Probable Mode of Action:

Raktamokshana is the only *shodhana* procedure where the vitiated *doshas*are taken out from the *shakhas* itself by creating an artificial route. *Raktamokshana* has its importance in both *shodhana* as well as in Para surgical procedures. *Prachanna* is one among the *shastrakritarakta-mokshana* in which multiple small incisions/pricks are made to irrigate the impure blood. Here we have taken it as the pre therapy to *Lepa* to enhance the efficacy of *Prachanna.*

Prachanna increases the circulation in the scalp. It removes the vitiated *Raktha and Kapha* which obstructs the hair roots. *Prachanna* is done as the pre therapy to *Lepa* to enhance the efficacy of *Lepa. Prachanna* improves the perifollicular vascularisation and strengthens the hair follicle.

Bhringaraja by virtue of *Katu, tiktarasa*;*laghu, ruksha, tikshnaguna and katuvipaka* balances *Kaphadosha*, by *Ushna Virya* balances *Vata*and by *Tikta rasa* balances *pitta dosha. Hence*, it acts as *tridosha shamaka*.[16]

Table 8: Parts containing chemical constituents

Sl.No.	Parts	Chemical constituents
1	Leaves	Wedelolactone[1.6%], Desmethylwedelolactone,Desmethyl-wedelolactone-7-glucoside, stigmasterol
2	Roots	Hentriacontanol, Heptacosanol & Stigmasterol, Ecliptal, Eclalbatin.
3	Aerial parts	P-amyrin& Luteolin-7-O-glucoside, Apigenin, Cinnaroside, Sulphur compounds, Eclalbasaponins I-VI
4	Stems	Wedelolactone
5	Seeds	Sterols, Ecliptalbine (alkaloid)
6	Whole plant	Resin, Ecliptine, Reducing sugar, Nicotine, Stigmasterol, Triterpenesaponin, Eclalbatin,Ursolic acid, Oleanolic acid

It contains saponin, alkaloids, ecliptine, wedelic acid, luteolin, triterpine, glycosides, flavanoids and isoflavanoids. It contains wedelolactone and dimethyl wedelolactone. The herb is also a rich source of ascorbic acid. The plant is a good source of thiophene derivatives which are active against nematodes. Wedelolactone is antitoxic and inhibit haemorrhagic lesions. All these constituents help in wound healing, have insecticidal properties and rejuvenate hairs. Especially saponins help in accelerating numerous biological activities including hemolytic, anti-bacterial, anti-viral, and anti-oxidative functions. In addition, saponins reportedly have anti-inflammatory activity which can reduce edema and skin inflammation. Stigmasterol has various pharmacological properties likeantimutagenic, antioxidant, and anti-inflammatory activity which help in wound healing and hair growth.[10]

Bhringaraja Lepa applied over the scalp by the effect of its *Rasa, Guna, Veerya, Vipaka*, is absorbed by the hair follicles and which in turn causes the pores to open up and by the *Prabhava* of the drug hair growth can be observed. *Prachanna* drains out the vitiated blood from *Srotus* and later when *lepa* is applied over the region it facilitates easy and faster absorption of the drug.

In a pilot study of botulinum toxin injection to scalp in male type baldness postulated that botulinum relaxes the scalp muscles thus reducing pressure on the perforating vasculature and improving blood flow and this study reveals that by increasing blood flow and oxygen concentration around the scalp can stimulate the hair follicles for hair re-growth. In the same way *Prachanna* also increases the blood flows by continuous pricking thus helping in removing the *Dooshitha Raktha* in larger scalp area. This helps in stimulating the hair follicles for new hair growth.

CONCLUSION

Khalitya is one among the *Kapala Rogas*. The etiology, pathology and the clinical features are nearly similar to that of Hair fall. Different etiological factors like *Ativyayama*, *Atapa*, *dhooma* and *Rajosevana*, precipitate to cause *Khalitya*. The prevalence of disease is observed more in males than females. *Prachanna* followed by *Lepa* has very significant effect in pacifying it. Overall reduction of Hair fall is 60.7% and 69% in Group A and B respectively. No side effects of the drug were observed during the course of study after administration.

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