

Efficacy of *Virechana*, *Triphaladi* decoction with processed *Guggulu* in the management of ovarian cyst - A pilot study

Matangee Pandya, Shilpa B. Donga, L. P. Dei, Anup B. Thakar¹

Department of Prasutitantra and Streeroga and ¹Panchakarma, ITRA, Jamnagar, Gujarat, India

Abstract

Background: Ovarian cyst is an emerging problem among the women of reproductive age group. Most of the ovarian cyst (80%–85%) are benign, and two-thirds of these occur in women between 20 and 44 years of age. They may be identified in asymptomatic women during routine pelvic examination or may produce symptoms. Management of the ovarian cyst through surgery is available to meet urgent need of the patient, but to establish a satisfactory conservatory medical treatment is the need of the hour. According to Ayurveda, ovarian cysts can be managed on the line of *Kaphaja Granthi* (nodular/glandular swellings by *Kapha Dosha*) and *Vidradhi* (abscess). **Aim:** The aim of this study was to evaluate the clinical efficacy of *Virechana* (therapeutic purgation), *Triphaladi Kashaya* (decoction) with processed *Guggulu* (*Commiphora mukul* Engl.) in the management of ovarian cyst. **Materials and methods:** 16 patients were included in this clinical study and among them, 15 patients completed the treatment and one patient was dropped out from the trial. Patients were given *Virechana* followed by *Triphaladi Kashaya* (50 ml) with processed *Guggulu* (1 g) orally twice a day before meal for 60 days. The patients were followed up till 1 month. The assessment was carried out on subjective parameters such as lower abdominal pain, backache, and dysmenorrhea as well as objective parameters such as ovarian cyst size and volume by four-dimensional gray scale and color doppler sonography. Cancer antigen 125 was also assessed before and after treatment. Results were statistically analyzed using Wilcoxon signed-rank test and Student's *t*-test by sigma statistical tool (version 3.5, Systat Software Inc., United States). **Results:** Significant results were observed in subjective parameters such as lower abdominal pain (93.11%), backache (81.81) and dysmenorrhea (90.90%) as well as objective parameters such as reduction in size of the cyst (60%) and complete resolution of the cyst (26.66%). **Conclusion:** *Triphaladi Kashaya* with processed *Guggulu* is more effective in hemorrhagic cyst and simple cyst rather than other cyst, due to *Shothahara* properties which may have effectively curtailed the progress of ovarian cyst.

Keywords: Ovarian cyst, processed *Guggulu*, *Triphaladi Kashaya*, *Virechana*

Introduction

An ovarian cyst is a sac filled with fluid that forms on or inside the ovary. When the follicles in the ovaries do not rupture, they form small cysts and any ovarian follicle that is larger than 2 cm is an ovarian cyst. Ovarian cyst can range widely in size, from being as small as pea to larger as an orange. In a cross-sectional study, about 4%–7% of women who were examined by sonography had ovarian cysts larger than 30 mm. While many of these ovarian cysts are spontaneously impoverished, some of them require surgical interventions, leading to discomfort, risks of performed interventions and treatment cost.^[1] There is the most discriminating four-dimensional gray scale and color doppler sonographic features to determine differentiation between malignant and benign adnexal masses and to develop a scoring model called Assuit Scoring Model (ASM) that

would enable more accurate diagnosis with features, i.e. tumor volume, type of mass, papillary projection, and septe with 0–3 score, which was adapted in this study.^[2] There is no effective treatment for ovarian cysts in modern science rather only hormonal therapy and laparoscopy; hormonal therapy which has its side effects. While laparoscopy or surgical management is a treatment option, there is a chance of recurrence in most of the cases, and hormonal therapy is not a cure. Hence, there

Address for correspondence: Prof. Shilpa B. Donga,
Department of Prasutitantra and Streeroga, ITRA, Jamnagar - 361 008,
Gujarat, India.
E-mail: drshilpadonga@yahoo.com

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is need to define an effective Ayurvedic treatment protocol for the prevention and cure of ovarian cyst.

When the deranged *Tridosha* (bio humors) vitiates the *Mamsa* (fleshy/muscles), *Asrik* (blood), and *Meda Dhatu* (fat/adipose tissue) along with *Kapha*, it produce a circular, raised, and knotted inflammatory swellings called *Granthi* (nodular/glandular growth).^[3] Main clinical feature of *Granthi*, *Vidradhi* (abscess), and *Apachi* (enlargement of the glands of the neck) is swelling/inflammation or protuberance.^[4] *Shotha* (inflammation) may occur in different body parts; these are of many types due to the different location and clinical features.^[5] Hence, ovarian cyst can be called as *Beejakosha Granthi* (ovarian cyst) on the basis of its location in *Beejakosha* (ovary) and its surroundings. Ovarian cyst produces symptoms such as lower abdominal pain, lower backache, dyspareunia, dysmenorrhea, amenorrhea, menorrhagia and breast tenderness. It is assumed the drug to be effective in removing the ovarian cyst, should possess *Shothahara* (anti-inflammatory) properties, *Kapha-Medohara* (which alleviates vitiated *Kapha Dosha* and *Medo Dhatu*) properties and *Granthi-Vidradhihara* (which resolve cyst and abscess) properties. *Virechana* (therapeutic purgation) is indicated in *Granthi*.^[6,7] *Trivrita* (*Operculina turpethum* Linn.), *Danti* (*Baliospermum montanum* Muell-Arg.), and *Triphala* – (combination of three drugs viz. *Terminalia chebula* Retz., *Terminalia belerica* Roxb. and *Emblica officinalis* Gaertn.) decoction was selected for *Virechana* which has purification property of vitiated *Dhatu* (tissue).^[8] After *Virechana*, the effect of *Shamana* (conservative) drug becomes more potent.^[9] Hence, *Triphaladi Kashaya* with *Shuddha Purana Guggulu* was given as *Shamana* drug. *Triphaladi Kashaya* (decoction) has properties of *Shothahara*, *Granthihara* (reducing size of cyst), *Kapha-Medohara*, and *Vatanulomana* (normal movement of *Vayu*) actions.^[10] *Prakshepa* (condiments) of processed *Guggulu* has property of *Lekhana* (scraping) and it removes *Srotorodha* (obstructive pathology occurring in the channel).^[11] Considering these, the research work was planned to assess the clinical efficacy of *Virechana*, *Triphaladi Kashaya* with processed *Guggulu* in the management of ovarian cyst. Primary outcome of the study was removal and/or reduction in the size of the cyst. Secondary outcome was changes in cardinal and associated clinical features related to ovarian cyst.

Materials and methods

The females ($n = 16$) attending the OPD of Prasutitantra and Streeroga, IPGT&RA, Jamnagar, fulfilling the inclusion criteria of selection, were registered in the study irrespective of their caste and religion. The study was approved by the Institutional Ethics Committee, IPGT&RA, Jamnagar (IEC No. PGT/7/-A/Ethics/2017-18/2069, dated November 17, 2017). The study was registered in the Clinical Trial Registry India (CTRI/2018/01/011289, Registered on: January 12, 2018). Before initiation of the study, written informed consent was taken from each patient. A detailed clinical research

proforma, incorporating all the points of history-taking, physical examination, and assessment of the treatment, was maintained for record and analysis purpose. Ingredients of *Trivritadi Kashaya* and *Triphaladi Kashaya* was procured from pharmacy of Gujarat Ayurved University, Jamnagar and *Guggulu* was purchased from Gujarat State Forest Department store of Jamnagar and identified in the pharmacognosy laboratory of IPGT&RA, Jamnagar [Table 1].

Criteria and method for diagnosis

Transvaginal sonography (TVS) was done on the 4th or 5th day of menstrual cycle for diagnosis of an ovarian cyst for consecutive two cycles prior enrollment of the patient.

Inclusion criteria

- Married females having age group between 18 and 50 years
- Patients having ovarian cyst size ≤ 7 cm
- Single or multiple/unilateral or bilateral/unilocular or multilocular ovarian cyst

Table 1: Ingredients for trial drug

Drug	Latin name	Parts used	Quantity
<i>Trivritadi</i> decoction (<i>Virechana</i> drug)			
<i>Danti</i>	<i>Baliospermum montanum</i> Muell-Arg.	Root	1 part (7 g)
<i>Trivrita</i>	<i>Operculina turpethum</i> Linn.	Root bark	2 part (14 g)
<i>Triphala</i> *	<i>Haritaki</i> <i>Terminalia chebula</i> Retz.	Fruit	4 part (28 g)
	<i>Bibhitaki</i> <i>Terminalia belerica</i> Roxb.	Fruit	
	<i>Amalaki</i> <i>Emblica officinalis</i> Gaertn.	Fruit	
<i>Triphaladi</i> decoction (conservative treatment)			
<i>Triphala</i> *	Equal quantity of <i>Haritaki</i> , <i>Bibhitaki</i> and <i>Amalaki</i>	Fruit	12 g
<i>Shigru</i>	<i>Moringa oleifera</i> Lam.	Stem bark	12 g
<i>Varuna</i>	<i>Crataeva nurvala</i> Buch. Ham.	Bark	12 g
<i>Dashamula</i>	<i>Bilva-Aegle marmelos</i> Corr.	Stem bark	12 g
	<i>Agnimantha-Clerodendrum phlomidis</i> Linn.f.	Stem bark	
	<i>Shyonaka-Oroxylum indicum</i> Vent.	Stem bark	
	<i>Gambhari - Gmelina arborea</i> Roxb.	Stem bark	
	<i>Patala - Stereospermum suaveolens</i> DC.	Stem bark	
	<i>Brihati - Solanum indicum</i> Linn.	Whole plant	
	<i>Kantakari - Solanum surattense</i> Burm.f.	Whole plant	
<i>Guggulu</i>	<i>Shalaparni - Desmodium gangeticum</i> DC.	Whole plant	
	<i>Prishniparni - Urtica picta</i> DESV.	Whole plant	
	<i>Gokshura - Tribulus terrestris</i> Linn.	Fruit	
<i>Guggulu</i>	<i>Commiphora mukul</i> Engl.	Resin	1 g

Exclusion criteria

- Pregnant women
- Women with hemoglobin <7 gm%
- Tubo-ovarian mass, dermoid cyst, and malignant tumors
- Patients with uncontrolled hypertension, diabetes mellitus, tuberculosis, and any other severe systemic disease
- Patients contraindicated for *Virechana Karma*.

Investigations

- Routine hemogram such as Hb% (hemoglobin), total leukocyte count, differential leukocyte count, erythrocyte sedimentation rate, platelet count, bleeding time, and clotting time was done. Biochemical investigations such as fasting blood sugar, postprandial blood sugar, liver function test (total serum bilirubin, serum glutamic pyruvic transaminase, and serum glutamic oxaloacetic transaminase), renal function test (blood urea, uric acid, and serum creatinine), lipid profile (serum cholesterol, serum triglycerides, serum high-density lipoprotein, serum low-density lipoprotein [LDL] and very LDL) were performed in all registered patients. Urine analysis for routine and microscopic was also done. Cancer antigen 125 (CA 125) and serum prolactin were also investigated. These investigations were done before treatment (BT) and after treatment (AT). TVS was done BT and AT. Serological investigation i.e. Human immunodeficiency virus, hepatitis B surface antigen, venereal disease research laboratory and hepatitis C virus were done only BT.

Treatment protocol

In the present study, the treatment duration was 10 weeks (2 weeks for *Virechana Karma* and 8 weeks for conservative treatment [Table 2]). The patient was advised for *Virechana Karma* after cessation of menses. After *Virechana Karma*, *Triphaladi Kashaya* with processed *Guggulu* was given orally for 8 weeks [Table 2].

Medicine preparation

All the ingredients of the formulations were identified and authenticated in the Pharmacognosy Laboratory of IPGT&RA, Jamnagar. *Guggulu* which was already collected by Gujarat State Forest Department Corporation Limited, Vadodara, on October 20, 2016, was obtained from its branch in Jamnagar dated August 24, 2017 and was preserved under identical condition to make it as *Purana*. *Purana* (old) *Guggulu* was purified by *Triphala* decoction in the Rasashastra and Bhaishajyakalpana Department, IPGT&RA, Jamnagar, on January 29, 2018.^[12] Coarse powder of *Triphala* was soaked in water for overnight. Next day, it was boiled at low temperature (100°C) without covering it. Water was evaporated slowly and reduced till the quantity became 1/4th. It was filtered with clean cotton cloth. Filtered liquid was again heated and then, impure *Guggulu* was added in it and stirred well, which was filtered by cotton cloth and obtained residue was collected in cloth and discarded. This filtered liquid was again boiled on stove on medium temperature of 100°C with continuous stirring. When it was converted in to soft mass,

it was transferred in a small vessel to avoid the burning of *Guggulu* at the bottom of vessel. This processed *Guggulu* was kept under sunlight for 15 days, and then, fine powder was prepared and stored in an air tight container.

Posology

Deepana Pachana (administration of appetizers and digestives) was performed by the administration of *Trikatu* (mixture of *Zingiber officinale* Roscoe., *Piper nigrum* Linn. and *Piper longum* Linn. in equal portion) powder 3 g thrice daily before food with lukewarm water till the symptoms of appropriate *Agni Deepana* (enhanced appetite) were attained. Thereafter, *Snehapana* with *Goghrita* in *Arohana Krama* (internal oleation with increasing dose starting with dose of 30 ml to end with average dose of 200 ml) was done till proper oleation symptoms were achieved for average 5–7 days. During the gap of 3 days and on the day of *Virechana*, *Sarvanga Abhyanga* (whole-body massage) with *Bala Taila* (oil prepared with *Sida cordifolia* Linn.) was done followed by *Vashpa Sweda* (steam fomentation). *Virechana* was performed by the administration of *Trivritadi* decoction approximately 250 to 500 ml on the 4th day after performing of *Abhyanga* and *Swedana*, on empty stomach. *Samsarjana Krama* (post-*Virechana* dietary regimen) was advised for 3–7 days depending on the *Shuddhi Lakshanas* (purification signs).^[13]

For *Shamana Yoga* (conservative treatment), *Triphaladi* coarse powder^[12] was given to the patient to prepare *Kwatha* as per method of *Kwatha Kalpana* (preparation of decoction)^[14] after post-*Virechana* dietary regimen. For this patient was asked to take 48 g of coarsely powdered drugs and boil with 16 parts of water in steel vessel, over a mild flame till the liquid was reduced to 1/8th of the original quantity. *Triphala Kwatha* 50 ml and *Shuddha Purana Guggulu* 1 g was given orally before meal for two time a day for 2 months to patients.

Follow up

Follow-up study was conducted every week during the treatment for 2 months and after completion of treatment at the interval of 15 days for 1 month.

Criteria of assessment

Subjective criteria

Cardinal and associated clinical features like lower abdominal pain, backache, dysmenorrhea, breast tenderness, duration of blood loss, and dyspareunia were assessed before and after treatment. [Table 3].

Objective criteria

Changes in size, volume, vascularity of the ovarian cyst through three-dimensional color doppler ultrasonography, Assuit Scoring Model (ASM)^[4] (for differentiation of adnexal masses) and also laboratory parameters i.e. CA 125 and S. prolactin were assessed.

Statistical estimation of results

The information gathered based on the observations was subjected to statistical analysis. Sigma stat (version 3.5,

Table 2: Procedure of *Virechana Karma*

Procedure	Drug and dose	Duration (days)
<i>Deepana</i> and <i>Pachana</i>	<i>Trikatu Churna</i> -2 g/3 times a day with warm water after meal	3
<i>Snehapana</i> (internal oleation)	<i>Go-Ghrita</i> (as per <i>Koshtha</i> and <i>Agni</i>)	3-7
<i>Abhyanga</i> and <i>Swedana</i> (massage and steam)	<i>Bala Taila</i> and <i>Bashpa Sweda</i> (morning time)	4
<i>Virechana Karma</i> (therapeutic purgation) (<i>Virechana Yoga</i> – Ch. Chi 7/44)	<i>Triphala</i> 4 part (28 g) <i>Trivrita</i> 2 part (14 g) <i>Danti</i> 1 part (7 g)	1 (single dose)
<i>Samsarjana Karma</i> (post- <i>Virechana</i> regimen)	Diet (depending on purification features) (<i>Peya</i> [thin gruel of rice], <i>Vilepi</i> [thick gruel of rice], <i>Akrit Yusha</i> [nonprocessed soup of vegetables and pulses], <i>Krit Yusha</i> [processed soup of vegetables and pulses], normal diet)	3-7

Systat Software Inc., United States) was used to find the standard deviation, standard error, “*t*” and “*P*” values. The Wilcoxon’s signed-rank test was applied for all non-parametric data (subjective criteria) to analyze the effect of therapy. Student’s paired *t*-test was applied for parametric data (objective criteria). *P* < 0.05 was considered as level of significance.

Observation on demographic data

Patients for the present clinical trial were registered between February 2018 and February 2019. Sixteen patients were registered for the present study; among them, one patient dropped out due to irregular follow-up of the treatment.

Out of 16 patients of the clinical study, 56.25% of the patients belonged to the age group of 26–35 years while 25% of the patients belonged to age group of 18–25 years. All patients (100%) were married. 62.5% of the patients had *Vata*-predominant *Kapha Prakriti* (constitution). The body mass/index (BMI) ranging between 18.5 and 24.9 kg/m² was found in 56.25% of the patients, between 25 and 29 kg/m² was found in 18.75% of the patients and more than 30 kg/m² BMI found in 25% of the patients. The symptoms reported in the patients were irregular menses (26.66%), scanty menses (20 kg/m), excessive menses (26.66%), intermenstrual bleeding (20%), lower abdominal pain (100%), lower backache (86.66%), dysmenorrhea (80%), breast tenderness (46.66%) and dyspareunia (46.66%). No any asymptomatic patients were registered in the clinical trial. A history of pelvic inflammatory disease (18.75%) and hydrosalpinx (18.75%) was noted. Unilateral cyst was observed in 81.25% and bilateral cyst in 18.75% of the patients. Different types of the cysts such as simple cyst (43.75%), chocolate cyst (31.25%), complex cyst (31.25%) and hemorrhagic cyst (25%) were also reported. 73.13% of the patients had a history of primary infertility and 13.33% patients had a history of secondary infertility. CA 125 was found elevated in 18.75% of the patients and serum prolactin was found elevated in 12.5% of the patients.

Effect of therapy on subjective parameters

In the present study, the result revealed that 93.11% of the patients got relief in lower abdominal pain, 81.81% of the patients got relief in backache, 90.90% of the patients got relief in dysmenorrhea, 100% of the patients got relief in breast

tenderness. Irregular (delayed) menses was corrected in 50% of the patients, menses were normalized from scanty menses in 25% of the patients and excessive menstrual bleeding was reduced in 75% of the patients. Intermenstrual bleeding was stopped in 33% of the patients. The relief in lower abdominal pain, lower backache, and dysmenorrhea was statistically highly significant. The relief in breast tenderness was statistically significant. Insignificant result was observed in dyspareunia, irregular (delayed) cycle, intermenstrual bleeding, and scanty and excessive menstrual bleeding [Table 4].

Effect of therapies on objective parameters of all types of cyst

In the present study, 60% reduction in size of the cyst, 21.42% decrease in vascularity of the cyst and 63.80% decrease in volume of the cyst was found. The reduction in size of the cyst and volume of the cyst was statistically significant, while the reduction in vascularity of the cyst was statistically highly significant [Tables 5 and 6]. In ASM, score one was reported in one patient BT and AT. The score was zero in all other patients BT and AT. BMI was statistically significant by reduced 4.22%.

Before treatment, CA 125 was found elevated in 18.75% of the patients which was reduced to normal level after the treatment in all patients. Serum prolactin level was found above the normal range before treatment in 12.5% of the patients which became normal after the treatment.

Effect of therapy on different types of cyst

Among seven patients of simple (follicular) cyst, complete resolution of the cyst was reported in six patients while size of the cyst was reduced to 2 cm in one patient. One patient had tendency of follicular cyst in each cycle for the last 1 year which was decreased after completion of treatment. All four patients of hemorrhagic cyst had complete resolution of the cyst. Among two patients of chocolate cyst, the reduction of chocolate cyst was reported in one patient who had 3 cm size of cyst for 1 year which was reduced up to 2 cm in after the treatment. Second patient of chocolate cyst had no improvement in two-month treatment as it was 5 cm cyst and needed to continue treatment for long duration. She reported mild decrease in dysmenorrhea. Among five patients of complex cyst, 3 patients had unilateral and 2 patients had bilateral cyst. Unilateral cyst was reduced up to 1 cm in two patients and complete resolution was found in one patient.

Table 3: Scoring pattern of subjective parameter and objective parameter

Subjective and objective criteria	Grade
Lower abdomen pain	
No pain	0
Painful, no analgesic required	1
Painful, daily activity affected, analgesic required	2
Analgesic required but have no effect	3
Backache	
No pain	0
Painful, no analgesic required	1
Painful, daily activity affected, analgesic required	2
Analgesic required but have no effect	3
Dysmenorrhea	
No pain	0
Painful, no analgesic required	1
Painful, daily activity affected, analgesic required	2
Analgesic required but have no effect	3
Breast tenderness	
No pain	0
Painful, no analgesic required	1
Painful, relief after menstruation	2
Analgesic required but have no effect	3
Duration of blood loss (days)	
4-7	0
2-3	1
1	2
>7	3
Interval between two cycles (days)	
21-35	0
<21	1
>35-60	2
>60	3
Size of cyst	Grade
No cyst	0
2-3 cm	1
3-4 cm	2
4-5 cm	3
5-6 cm	4
6-7 cm	5
Amount of blood flow/vascularity	
No blood flow	0
Minimal blood flow	1
Moderate blood flow	2
Highly vascularized with marked blood flow	3
BMI	
18.5-24.9 (optimal weight)	0
<18.5 (underweight)	1
25-29 (over weight)	2
>30 (obese)	3

BMI: Body mass index, BT: Before treatment, AT: After treatment

Bilateral cyst was reduced to 1 cm from 2 cm cyst in one patient while another patient got complete resolution. [Table 7].

Discussion

Ovarian cyst is an emerging problem among the women of reproductive age group. Presence of the ovarian cyst leads to

congestion causing discomfort in the abdomen.^[3] Pain may be due to some complications of the ovarian cyst or due to associated pelvic pathology. Ovarian cyst may also hamper the menstrual cycle as well as ovarian cycle and results into anovulation which cause infertility. *Mamsa*, *Asrik* and *Medo Dhatu* are vitiated in disease *Granthi*. Although excessive amount of *Kapha* and *Manda* (mild) *Mamsagni* are responsible for growth of *Granthi*, it is mainly due to *Sanga* (obstruction due to contraction of lumen).

Trikatu (mixture of *Z. officinale* Roscoe., *P. nigrum* Linn., and *P. longum* Linn.) improves the *Agni* (digestive fire) and helps in the removal of *Ama* (toxins) from the body.^[15-17] *Virechana* eliminates vitiated *Kapha Dosh*a and removes obstruction of *Vata Dosh*a from *Artavavaha Srotas* (reproductive system) and reduces *Sanga* (obstruction due to contraction of lumen) and *Siragranthi* (obstructive pathology occurring in channel) of reproductive system. *Virechana* also works as *Shodhana* (purification) of *Pitta* and *Rakta*. By this, it removes accumulated *Doshas* from the body. On the other hand, it reduces extra subcutaneous fat. Hence, it stops the aromatization of androgen to estrogen and reduces extra ovarian estrogen from the body, which reduces the size of the cyst and vascularity.^[18] *Trivrita* (*B. montanum* Muell-Arg.), *Danti* (*O. turpethum* Linn.) and *Triphala* (mixture of *T. chebula* Retz., *T. belerica* Roxb., and *E. officinalis* Gaertn.) eliminates vitiated blood.^[19,20] Effect of *Shamana* drug becomes more potent after purification process. *Vitiated Dhatu* is purified and gets healthy due to *Virechana*.^[9] *Triphaladi Kashaya* (*Triphala* [mixture of *T. chebula* Retz., *T. belerica* Roxb. and *E. officinalis* Gaertn.]), *Varuna* (*Moringa oleifera* Lam.), *Shigru* (*Crataeva nurvala* Buch. ham) and *Dashamula* (mixture of *Bilva - Aegle marmelos* Corr., *Agnimantha - Clerodendrum phlomidis* Linn. f., *Shyonaka - Oroxyllum indicum* Vent., *Gambhari - Gmelina arborea* Roxb., *Patala - Stereospermum suaveolens* DC., *Brihati - Solanum indicum* Linn, *Kantakari - Solanum surattense* Burm. f., *Shalaparni - Desmodium gangeticum* DC, *Prishniparni - Uraria picta* DESV and *Gokshura - Tribulus terrestris* Linn.) with processed *Guggulu* have properties of *Kapha-Medohara* and *Vidradhihara*^[10] Active compounds of *Haritaki* are effective in treating cancer.^[21] *Triphala* has the ability to induce cytotoxicity (cell death) in tumor cells but spares the normal cells.^[22] Similarly, *Triphala* is effective in reducing tumor incidence and increasing the antioxidant status.^[23] *Triphala* has analgesic^[24] and anti-inflammatory effect.^[25] *Varuna* has an anti-inflammatory property by chemical lupeol. Lupeol decreases myeloperoxidase levels (neutrophil-specific marker), thus causing reduction in cell infiltration into inflamed tissues.^[26] A number of triterpenoids have shown potential as antineoplastic agents and exhibit antiproliferative activity when tested against various cancer cell lines.^[27] *Shigru* has *Deepana-Pachana* (to enhance appetite and metabolism), *Kapha-Vatahara* (pacifies *Vata* and *Kapha*) properties. It is recommended in *Galaganda* (thyroid disorders), *Kandu* (itching), *Shotha*, *Apachi*, *Vrana* (wound), *Medoroga* (lipid metabolic disorders), *Vidradhi* (abscess),

Table 4: Effect of therapy on subjective parameters

Subjective parameter	n	Mean		Mean difference	Percentage of relief	Values of Wilcoxon signed rank test		
		BT	AT			Z	P	Significance
Lower abdominal pain	15	1.93	0.13	1.80	93.11↓	3.626	<0.001	HS
Backache	15	1.46	0.26	1.20	81.81↓	3.286	<0.001	HS
Dysmenorrhea	15	1.46	0.06	1.33	90.90↓	2.980	<0.001	HS
Breast tenderness	4	0.60	0.00	0.60	100↓	2.460	0.016	S
Dyspareunia	3	0.20	0.06	0.13	66.50↓	1.414	0.500	IS
Irregular (delayed) menses	4	2.00	1.00	1.00	50↓	0.921	0.375	IS
Scanty menses	5	1.60	1.20	0.40	25↓	1.414	0.500	IS
Excessive menstrual bleeding	4	3.000	0.75	2.25	75↓	1.841	0.125	IS
Inter menstrual bleeding	3	1.00	0.57	0.33	33↓	1.000	1.000	IS

n: Number of patients, P: Level of significance, Z: Signed rank mean. ↓: A decrease, HS: Highly significant, S: Significant, IS: Insignificant, BT: Before treatment, AT: After treatment

Table 5: Effect of therapy on objective parameter (n=15)

Objective parameter	Mean		Mean difference	Percentage of relief	Values of Wilcoxon signed rank test		
	BT	AT			Z	P	Significance
Size of cyst	2.33	0.93	1.40	60.00↓	2.761	0.004	S
Vascularity	1.66	0.66	1.00	21.42↓	3.066	<0.001	HS

P: Level of significance, Z: Signed Rank mean. ↓: A decrease, S: Significant, HS: Highly significant, BT: Before treatment, AT: After treatment

Table 6: Effect of therapy on ovarian cyst volume (n=15) Paired t-test

Objective parameter	Mean±SD		Mean difference±SD	Percentage of relief	SE (±)	t	P	Significance
	BT	AT						
Cyst volume	29.86±33.20	10.80±19.27	19.06±33.92	63.83↓	8.75	2.17	0.047	S

t: Students paired t-test calculated value, P: Level of significance. ↓A decrease, S: Significant, SD: Standard deviation, SE: Standard error of mean, BT: Before treatment, AT: After treatment

Table 7: Effect of therapy on different type of cyst

Type of cyst	Number of patients	Complete resolution of ovarian cyst in patients		Reduction of ovarian cyst in patients			No improvement in ovarian cyst
Simple cyst	7	6 (3 cm size of cyst in each patient)		1 (2 cm reduce from 4 cm size of cyst)			-
Hemorrhagic cyst	4	4 (3 cm size of cyst in each patient)		-			-
Chocolate cyst	2	-		1 (2 cm reduced from 4 cm size of cyst)			1 (5 cm size of cyst)
Complex cyst	5	2		3			-
		1 st : unilateral complete resolution from 3 cm size of cyst;	2 nd : bilateral complete resolution from 1 cm size of cyst)	1 st : unilateral 1 cm reduce from 3 cm	2 nd : unilateral 1 cm reduce from 2 cm	3 rd : bilateral 1 cm reduce from 2 cm	

Gulma (a type of lump), etc.^[28] *Shigru* has properties such as anti-inflammatory^[29] and antioxidative activity.^[30] *Dashamula* has anti-inflammatory property.^[31,32] *Dashamula* has consistently shown efficacy in acute inflammation at the possibility of prostaglandin synthesis inhibition as the probable mechanism of action.^[33] *Guggulu* has antiobesity^[34] and anti-inflammatory properties.^[35] *Purana Guggulu* possesses scrapping and *Medohara* properties^[36]. Thus, ovarian cysts were resolved by administrating *Virechana* and *Triphaladi*

Kashaya along with processed *Guggulu* by virtue of its *Shothahara* and *Lekhana* properties.

Conclusion

Ovarian cyst is seen during the reproductive life of a female irrespective to the age, which may result in various menstrual problems such as dysmenorrhea and irregular periods, by disturbing anatomical as well as physiological integrity.

Management of this problem is possible on the basis of Ayurvedic fundamental principles. *Virechana Karma* and *Triphaladi Kashaya* with processed *Guggulu* provided statistically significant improvement in reduction and resolution in size of cyst, lower abdominal pain, backache, and menstrual abnormalities. Encouraging result was found in the hemorrhagic cyst and simple cyst than other cysts in this study. A further clinical study on large sample can establish the role of this therapy in cases of specific ovarian cyst.

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Conflicts of interest

There are no conflicts of interest.

References

- Grimes DA, Jones LB, Lopez LM, Schulz KF. Oral contraceptives for functional ovarian cysts. *Cochrane Database Syst Rev*. 2011 Sep 7;(9), p 1-6.
- Abbas AM, Zahran KM, Nasr A, Kamel HS. A new scoring model for characterization of adnexal masses based on two dimensional gray scale and color Doppler sonographic features. *Facts Views Vis Obgyn* 2014; 6:68-74.
- Acharya YT, editor. *Sushruta Samhita of Sushruta, Nidana Sthana*. Ch. 11, Ver. 03. 9th ed. Varanasi: Chaukhamba Orientalia; 2007. p. 310.
- Acharya YT, editor. *Sushruta Samhita of Sushruta, Sutra Sthana*. Ch. 17, Ver. 03. 9th ed. Varanasi: Chaukhamba Orientalia; 2007. p. 81.
- Acharya YT, editor. *Charaka Samhita of Agnivesha, Chikitsa Sthana*. Ch. 14., Ver. 74. Reprint ed. Varanasi: Chaukhamba Orientalia; 2011. p. 488.
- Mitra Jyotir, editor. *Ashtanga Samgrah of Vriddha Vagbhatta, Uttara Sthana*. Ch. 35, Ver. 02. 4th ed. Varanasi: Chaukhamba Sanskrit Series Office; 2016. p. 808.
- Kasture Vaidhya Haridas Shridhar, editor. *Ayurvediya Panchakarma Vignan*. Ch. 5. 11th ed. Nainee: Shri Vaidyanath Ayurved Bhavan Limited; 2018. p. 292.
- Acharya YT, editor. *Charaka Samhita of Agnivesha, Chikitsa Sthana*. Ch. 07, Ver. 44. Reprint ed. Varanasi: Chaukhamba Orientalia; 2011. p. 452.
- Acharya YT, editor. *Charaka Samhita of Agnivesha, Sutra Sthana*. Ch. 16, Ver. 20-21. Reprint ed. Varanasi: Chaukhamba Orientalia; 2011. p. 97.
- Tripathi Indradev, editor. *Chakradatta of Chakrapanidatta*. Ch. 43, Ver. 10. 3rd ed. Varanasi: Chaukhamba Sanskrit Sansthan; 1997. p. 255.
- Pandey Gangasahay, editor. *Bhavprakasha Nighantu of Bhavamishra. Karpuradi Varga*. Ch. 2, Ver. 42. Reprint ed. Varanasi: Chaukhamba Bharati Academy; 2010. p. 195.
- Anonymous. *The Ayurvedic Formulary of India, Part 1, 2nd edition, Guggulu* New Delhi; Department of Indian system of Medicine and Homeopathy, Ministry of Health and Family Welfare, Government of India; 2003, P 65.
- Acharya YT, editor. *Charaka Samhita of Agnivesha, Siddhi Sthana*. Ch. 1, Ver. 11. Reprint ed. Varanasi: Chaukhamba Orientalia; 2011. p. 678.
- Sharma Guruprasad, editor. *Sharangadhara Samhita of Acharya Sharangadhara, Madhyama Khanda*. Ch. 2, Ver. 1-2. Reprint ed. Varanasi: Chaukhamba Krishnadas Academy; 2013. p. 144.
- Kim JK, Kim Y, Na KM, Surh YJ, Kim TY. [6]-Gingerol prevents UVB-induced ROS production and COX-2 expression *in vitro* and *in vivo*. *Free Radic Res* 2007; 41:603-14.
- Lantz RC, Chen GJ, Sarihan M, Solyom AM, Jolad SD, Timmermann BN. The effect of extracts from ginger rhizome on inflammatory mediator production. *Phytomedicine* 2007; 14:123-8.
- Pandey Gangasahay, editor. *Bhavprakasha Nighantu of Bhavamishra, Haritakyadi Varga*. Ch. 1, Ver. 62, 63. Reprint ed. Varanasi: Chaukhamba Bharati Academy; 2010. p. 18.
- Dwarakanath C. *Digestion and Metabolism in Ayurveda*. Ch. 4, 2nd ed. Varanasi, Published by Chaukhamba Krishnadas Academy; 2003. p. 126.
- Pandey Gangasahay, editor. *Bhavprakasha Nighantu of Bhavamishra, Haritakyadi Varga*. Ch. 1, Ver. 43. Reprint ed. Varanasi: Chaukhamba Bharati Academy; 2010. p. 12.
- Pandey Gangasahay, editor. *Bhavprakasha Nighantu of Bhavamishra, Guduchyadi Varga*. Ch. 3, Ver. 195-200. Reprint ed. Varanasi: Chaukhamba Bharati Academy; 2010. p. 385.
- Saleem A, Husheem M, Harkonen P. Inhibition of cancer cell growth by crude extract and the phenolics of *Terminalia chebula* Retz. fruit. *biomedical and pharmacology journal*, 2002;81:327-36.
- Sandhya T, Lathika KM, Pandey BN, Mishra KP. Potential of traditional ayurvedic formulation, Triphala, as a novel anticancer drug. *Cancer Lett* 2006;231:206-14.
- Deep G, Dhiman M, Rao AR, Kale RK. Chemopreventive potential of Triphala (a composite Indian drug) on benzo (a) pyrene induced forestomach tumorigenesis in murine tumor model system. *J Exp Clin Cancer Res*. 2005;24 (4):555-63
- Collier HO, Dinneen LC, Johnson CA, Schneider C. The abdominal constriction response and its suppression by analgesic drugs in the mouse. *Br J Pharmacol Chemother* 1968; 32:1-16.
- Sowmiya Kalaiselvan, Mahaboob Khan Rasool. (2016) Triphala herbal extract suppresses inflammatory responses in LPS-stimulated RAW 264.7 macrophages and adjuvant-induced arthritic rats via inhibition of NF-KB pathway. *Journal of Immunotoxicology* 13:4, pages 509-525.
- Sikarwar MS, Patil MB. Antidiabetic activity of *Crateva nurvala* stem bark extracts in alloxan-induced diabetic rats. *J Pharm Bioall Sci* 2010; 2:18-21.
- Geetha T, Varalakshmi P. Anticomplement activity of triterpenes from *Crateva nurvala* stems bark in adjuvant arthritis in rats. *Gen Pharmacol* 1999; 32:495-7.
- Pandey Gangasahay, editor. *Bhavprakasha Nighantu of Bhavamishra, Guduchyadi Varga*. Ch. 3, Ver. 105-108. Reprint ed. Varanasi: Chaukhamba Bharati Academy; 2010. p. 324.
- Caceres A, Saravia A, Rizzo S, Zabala L, De Leon E, Nave F. Pharmacologic properties of *Moringa oleifera*. 2: Screening for antispasmodic, anti-inflammatory and diuretic activity. *J Ethnopharmacol* 1992; 36:233-7.
- Kumbhare MR, Guleha V, Sivakumar T. Estimation of total phenolic content, cytotoxicity and *in vitro* antioxidant activity of stem bark of *Moringa oleifera*. *Asian Pac J Trop Dis* 2012; 2:144-50.
- Acharya YT, editor. *Charaka Samhita of Agnivesha, Sutra Sthana*. Ch. 4, Ver. 16. Reprint ed. Varanasi: Chaukhamba Orientalia; 2011. p. 34.
- Nagarkar B, Jagtap S, Nirmal P, Narkhede A, Kuvalekar A, Kulkarni O, et al. Comparative evaluation of anti-inflammatory potential of medicinally important plants. *Int J Pharm Pharmaceutical Sci* 2013;5 Suppl 3:239-43.
- Parekar RR, Bolegave SS, Marathe PA, Rege NN. Experimental evaluation of analgesic, anti-inflammatory and anti-platelet potential of Dashamoola. *J Ayurveda Integr Med* 2015; 6:11-18.
- Bhatt AD, Dalal DG, Shah SJ, Joshi BA, Gajjar MN, Vaidya RA, et al. Conceptual and methodologic challenges of assessing the short-term efficacy of Guggulu in obesity: Data emergent from a naturalistic clinical trial. *J Postgrad Med* 1995; 41:5-7.
- Verma S, Jain A, Gupta VB. Synergistic and sustained anti-inflammatory activity of Guggulu with the ibuprofen: A preliminary study. *Int J Pharma Bio Sci* 2010;1: P. 120-126.
- Pandey Gangasahay, editor. *Bhavprakasha Nighantu of Bhavamishra. Karpuradi Varga*. Revised and enlarged ed. Ch. 2, Ver. 45. Varanasi: Chaukhamba Bharati Academy; 2010. p. 196.