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RESEARCH ARTICLE

SCALPEL TO SCAR WITH AYURVEDA: POST-DEBRIDEMENT APPLICATION OF KAMPILLAKATAILA IN A LEPROTIC ULCER CASE TO AVERT AMPUTATION – A HOLISTIC CASE REPORT

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KampillakaTaila, Leprotic Ulcer, Post-Debridement Healing, Integrative Wound Care, Rasayana, SatvavajayaChikitsa, Holistic Approach

Abstract

Background: The resurgence of ShalyaTantra as a modern surgical discipline remains incomplete without honoring its foundational science — Vrana Chikitsa. Chronic neuropathic wounds, particularly in leprotic conditions, pose challenges to both classical and contemporary treatment approaches. Kampillak aTaila, derived from Mallotusphilippensis, is a time tested Ayurvedic formulati on recognized for its Ropana (regenerative) and Krimighna (antimicrobial) pro perties. This case study exemplifies a truly integrative, innovative, and holistic wound care model.

Objective: To evaluate the clinical effectiveness of KampillakaTaila in the post debridement management of a chronic leprotic wound, using a holistic integrati ve protocol based on AyurvedicVrana Chikitsa, modern surgical hygiene, Rasa yana therapy, and mind-body support.

Methodology: A 53-year-old female with a non-healing leprotic plantar ulcer underwentsurgical debridement, followed by some weeks of antibiotics. Therea fter, a fully integrative protocol was initiated:
Topical care: KampillakaTaila application
Internal Rasayana: Guduchi, Ashwagandha
Lifestyle & Support: Satvavajaya Chikitsa, balanced diet, foot offloading.
Monitoring: Weekly wound assessment with five clinical parameters over 49 days(up to wound healing)

Results: Surface area reduced from 1200 mm² to 14.2 mm² (98.8%)Pain, odour, discharge, and granulation scores reached 0 by Day 21Meanhealingrate: 24.2 mm²/day (±12.72), 5.58%/day (±3.59%).No recurrence, reinfection, or second debridement required.

Conclusion: This case successfully demonstrates how the integration of Kampi llakaTaila with surgical care, internal Rasayana, and psychosomatic healing for ms a complete therapeutic system. It fulfills the holistic, evidence based, and cu lturally rooted approach to modern surgery, where traditional wisdom informs innovation.

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Introduction:-

The global incidence of leprosy is 21.2 cases per million individuals. In India, the rate of leprosy is 0.62 for every 10,000 people.[1]Research indicates that about 7% of leprosy patients have foot ulcers. However, for those who have lost feeling in their feet, this rate can rise to 34%.[2]This shows how important neuropathy is in causing ulcers. Leprosy is a chronic infectious disease caused by Mycobacterium leprae, primarily affecting the skin,peripheral nerves, mucosa of the upper respiratory tract**,** and eyes.[3] It manifests in a wide clinical spectrum, from tuberculoid (paucibacillary) to lepromatous (multibacillary) forms, depending on the host's immune response. Neuropathy is a hallmark of the disease, leading to loss of sensation, muscle weakness, deformities**,** and secondary complications such as trophic ulcers**.**Aleprotic ulcer**,** also referred to as a trophicorneuropathic ulcer**,** is characterized as a chronic ulceration occurring on an anesthetic foot**,**[4]The presence of a leprotic ulcer significantly contributes to the morbidity associated with leprosy.

Chronic, non-healing lesions known as leprotic ulcers are common among individuals with Hansen's disease (leprosy),particularly those who also haveperipheral neuropathy.These ulcers have multifactorialetiology with lesion sdueto weakening of the immune response, unnoticed trauma toaffectedareas, bacteriologic super-infection, loss of sensory detection and poor wound management.[5,6]The ulcers are difficult to treat duetolimited vascularization, ongoing mechanical loading and decreaseinnociceptiveresponse.They occur at sites of weight-bearing,typicallyon the plantarsurfaces.[7]These ulcers have a strong tendency towards recurrence and often require systematic and local treatment.

Leprosy (Hansen's disease) is one of the main skin diseases subsumed by MahaKushta, and is identified in Ayurveda as a form ofKushta.[8,9]Leprosy ischronic, progressive, and deforming properties map exactly on to the definitions of Kushta, which contain more than one Dhatu(Rasa,Rakta,Mamsa,and Lasika),and all three Dosha.[10]Othercharacteristi cs that are clinically present in leprosy can be frequently observed,as the clinical mani festations of both Kitibha and KakapadaKushta.[11]

सप्तद्रव्याणिकुष्ठानांप्रकृतिर्विकृतिमापन्नानि[१]भवन्ति|
तद्यथा-त्रयोदोषावातपित्तश्लेष्माणःप्रकोपणविकृताः,
दूष्याश्चशरीरधातवस्त्वङ्मांसशोणितलसीकाश्चतुर्धा[२]दोषोपघातविकृताइति|
(Cha. Ni 5/1, 2)

As a substantial discontinuity or breach of structural integrity in the body often represented as a wound, ulcer or lesion, Vrana is a technical term in Ayurveda.12 There references to Vrana in Indian Ayurvedic medical literature are innumerable, demonstrating its positional significance in Shalyatantra. Vrana may be broadly classified into two categories: Dushta Vrana and Shuddha Vrana. Dushta Vrana is a chronic or infected wound, while Shuddha Vrana is a clean or healing wound. Dushta Vrana represents non-healing, unpleasant, infected wounds with poor regeneration potential as a result of Tridosha vitiation and Dhatu Kshaya (tissue degeneration). Meanwhile, Shuddha Vrana typically depicts acute wounds with good granulation tissue and predictable healing.

Charaka elucidates the chronicity of Dushta Vrana – its deformity and excess discharge, but Sushruta lists its assortments of proprieties as: blackish discoloration, purulent exudate, putrid odor, severe pain, and irregular margins.13 In Ayurvedic pathogenesis, these wounds may occur from imbalances within (Nija Vrana), or external traumas (Agantuja Vrana).15 Therapeutic options commonly include Vrana Shodhana (disinfecting/cleaning), Vrana Ropana (healing), Rasayana (rejuvenation) along with lifestyle modifications thus, emphasizes a holistic approach to management and aims to restore both dynamics locally and systemically in the body.16

वृणोति[३९]यस्माद्रूढेऽपिव्रणवस्तुननश्यति
आदेहधारणात्तस्माद्व्रणइत्युच्यतेबुधैः[४०] ॥४०॥
(Su.Su 21 /40)

Symptomsofleprosy can be classified as Nija Vrana Kushta,whichisan ulcerative skin disease of internal origin dueto systemic Dosha vitiation, in the chronic conditionin which ulceration is occurring. This provides conventional classification for the treatment and a deeper understanding of the disease's pathophysiology. Conventional wound Management is typically the provision of antibiotics and surgical debridement, but chronic ulcers related to leprosy often have a delayed response or recurrence. This highlights the importance of combined integrative treatment plans, which include evidence-based Ayurvedic formulations with contemporary biomedical treatment plans, for instance, Kampillaka Taila. Kampillaka is the Latin name for Muell, Mallotus philippinensis. Arg., and it is part of the

Euphorbiaceae family.16 Among eight Sadharana Rasas17 which have been classified, it was described as a Phalini dravya18 by Acharya Charaka and included in the Shyamadi varga19 by Acharya Sushruta. Suvarnadivarga in Raja Nighantu has this plant, Chandanadi Varga20 of Dhanvantari Nighantu has it.

21 Kampillaka has been mentioned to cure various ailments, including udara, gulma, krimiroga, prameha, raktvikara, kshatha, kushta, and virechana22; however, of significance is its use in (wound) vrana. While discussing vrana, Acharya Charaka in the discussion on the Dwivraniyachikitsa Adhyaya, stated Kampillak Taila's vranaropak23 property.

"दूर्वास्वरससिद्धंवातैलंकम्पिल्लकेनवा।
दार्वीत्वचश्चकल्केनप्रधानंव्रणरोपणम्"
(Ch.Chi.25/93)

These types of treatment aim to restore tissue integrity and systemic equilibrium holistically as well as alleviate symptoms. Leprosy and Ayurvedic Kushta convey striking similarities, which reinforce the importance of an integrative treatment plan that utilizes Shodhana (detoxifying), Shamana (palliative) and Rasayana (rejuvenative) therapies.24 This integrative framework promotes the inclusion of both modern dressings and approaches to wound care with traditional Ayurvedic treatments to better address complex chronic wounds. The aim of this study is to illustrate how effectively Kampillaka Taila works to enhance wound healing after debridement in leprous ulcers, though a modern integrative framework

Case Presentation:-

A 53 year old female,accompanied by her son,presented to our OPD of Shalyatantrawith complaints of Non-healing ulcer at plantar aspect of right foot associated with a foul smell for the past 3 years,pain and pus discharge from ulcer from last 8 days.She also had toe deformities.She was previously advised below knee amputation at another hospital and came to us for a second opinion .After taking history found that she was a known case of leprosy since 12 years with no history of Diabetes, Hypertension and any other systemic illness.

Vitals of patients were within normal limits.No any systemic abnormality detected.Routine blood test were within normal limits.Orthopaedic consultation was taken advised below knee amputation due to deep seated infection involving bone.Considering patients relatively middle age,potential postoperative disability and impact on quality of life ,we opted for a conservative surgical approach.

Table No 1. Ulcer Assessment Criteria:

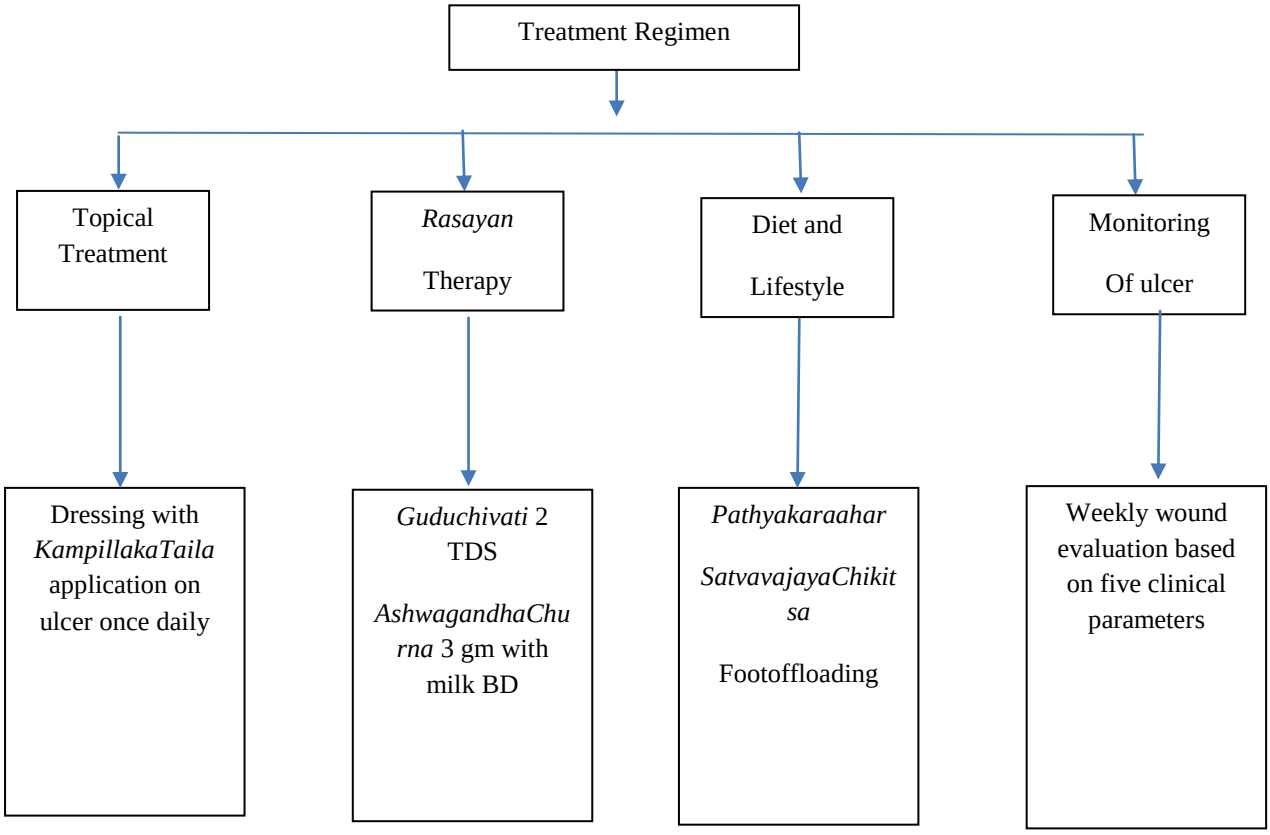
Sr No.	Criteria	Findings
1	Location	Plantar aspect of right foot and at webspace between 2nd and 3rd toe
2	Number	3
3	Size	3^3 cm ,2^1 cm,1^1cm
4	Shape	Oval
5	Exudate (Amount and Consistency)	Mild ,Thick
6	Necrotic Tissue (Slough)	Present
7	Margins	Irregular and oedematous
8	Edges	Irregular ,not well defined
9	Floor	Pale yellow
10	Odour	Mild
11	Surrounding Skin	Swelling
12	Sinus tracts and tunnelling	Present

The patient was admitted and underwent surgical debridement of ulcer .After that following postoperative protocol administered for 5 days to prevent secondary infection,as the ulcer extended to the bone level.

Table No 2. Postoperative Management:

Sr No.	Drug Name	Route	Dose
1	InjPiptaz 4.5gm in 100 ml NS	IV	TDS
2	Inj Pan 40 mg	IV	OD
3	Tab Acticlosp	Oral	BD
4	Tab Chymoral Forte	Oral	BD
5	Tab Limcee 500 mg	Oral	BD

Above treatment was given for 5 days and then following treatment regimen given :



Clinical assessment criterias for study :
Subjective criteria – 1. Vrana Vedana (Pain)

Objectivecriteria –
1. Vranaakruti (Surface area)
2.Vrana strava (discharge)
3. Vranagandha (odour)
4.Vranavarna (color of granulation tissue)
Subjective Criteria:
VranaVedana (Pain):
Pain will be assessed on Visual analogue scale.

Table no. 3: Assesement criteria for pain

Explanation	Score	Grade
No pain	0	0
Mild pain	1-3	1
Moderate pain	4-6	2
Severe pain	7-10	3

Objective Criteria –

1.Vrana Akruti (Surface area):

Size of wound will be taken by length and width of Wound.
This equation is to calculate the area of irregular surface
Kundin's formula - Akun = L X W X 0.785 mm2

2.Vrana Strava (Discharge):

Table no.4.Assessment criteria for Strava (Discharge)

Signs	Grade
No discharge	0
Mild discharge (If the patients wets 1 gauze piece in 24 hrs)	1
Moderate discharge (If the patients wets 2 gauze pieces in 24 hrs)	2
Severe discharge (If the patients wets more than gauze pieces in 24 hrs)	3
Excruciating discharge (Continuous and profuse discharge)	4

(Size of gauze piece – 10 cm ^10cm double layered)

3.Vrana Gandha (Odour):

Table no. 5: Assessment criteria for Gandha (odour)

Signs	Grade
No smell	0
Minimal bad smell	1
Tolerable unpleasant smell	2
Foul smell which is intolerable	3

4. VranaVarna (color of granulation tissue):

Table no. 6: Assessment criteria for Varna / Granulation tissue formation

Signs	Grade
Normal pigmentation	0
Brown color	1
Grey color	2
Pale yellow /blue /reddish color	3

Drug Name: Kampillakataila (prepared in our Rasshastra department)
Dose: 2 to 3 ml as per requirement of local application on wound
Duration: Till complete healing of wound
Follow up: 1st, 7th, 14th, 21st upto wound healing

Fig. 01 KampillakaTaila

Observation:-

The patient was observed over a period of 49 days following surgical debridement and the initiation of an integrative treatment protocol involving Kampillaka Taila, Internal Rasayana and supportive therapies.

Table no. 7: Grading of five assessment criterias

Day	Vrana Vedana	Vranaakruti(mm2) Length ^ Breadth	Vranastrava	Vranagandha	Vranavarna
1st	2	1200	3	2	1
7th	2	857.1	2	1	1
14th	1	714.2	1	1	1
21st	0	571.4	0	0	0
28th	0	342.8	0	0	0
35th	0	257.1	0	0	0
42nd	0	114.2	0	0	0
49th	0	14.2	0	0	0

The five Ayurvedic clinical parameters—Vrana Vedana (pain), Vrana Akruti (surface area in mm²), Vrana Strava (discharge), Vrana Gandha (odor), and Vrana Varna (color/granulation tissue appearance)—were used in assess the progress of the patients wound healing abilities.

The assessment of Day 1 revealed a large painful ulcer, measuring 1200 mm² in surface area, with dusky granulation tissue, huge amounts of discharge and an offensive odor. During further assessments for a weekly basis evidence presented with consistent improvement value. At Day 14 the granulation tissue became more ordered with pain and discharge significantly decreased. By Day 21, the Vrana Akruti decreased the surface area to 571.4 mm² simultaneously the pain, discharge, odor and appearance of color and granulation tissue were resolved (all scoring 0). After 49 days, only 14.2 mm² of surface area remained, 98.82% reduction in wound surface area, and the wound nearly closed completely due to time and consistency of KampillakaTaila and supportive care, demonstrating that the subjective and objective issues, have all been resolved.

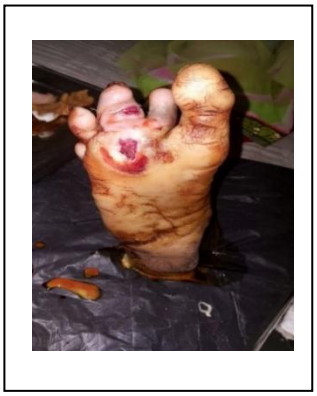


Figure 3. Before Surgery

Figure 4. Day 1

Figure 5. Day 7

(Granulation Tissue Formation)

Figure 6.Day 35th (Healing Stage) **Figure 7. Day 49th (Healed Scar)**

Statistical Analysis:-

By Day 49, all parameters subjected to assessment had shown statistically significant clinical improvements attributed to the standardized holistic wound management protocol. In the case of the pain score, the mean decreased from 2.0 to 0.0, a 100% decrease ($p < 0.05$, Wilcoxon signed-rank), with a standard deviation of 0.92. In the case of discharge and odor, the mean baseline scores were 3.0 ($p < 0.05$) and 2.0 ($p < 0.05$), and both reached 0.0 by Day 49, with standard deviations of 1.16 and 0.76 respectively, again representing 100% improvements. In one important objective measure, the wound surface area decreased from 1200.0 mm^2 to 14.2 mm^2, a contraction of 98.82 percent, with a standard deviation of 402.92. This was statistically significant ($p < 0.05$). The granulation tissue score increased from 1.0 to 0.0 (100 percent effect, SD=0.52). The Wilcoxon signed-rank test was employed to verify the changes were not due to chance, but represented an actual therapeutic benefit. These outcomes demonstrate the effectiveness of the KampillakaTaila,Internal Rasayana And Lifestyle Regulations in facilitating complete and sustained wound healing.

Table no. 8: Statistical Analysis of five assessment parameters

Sr. No	Parameter	Mean(Day 1)	Mean (Day 49)	Standard Deviation	% Effect
1	Pain	2.0	0.0	0.92	100.00 %
2	Surface area	1200.0	14.2	402.92	98.82 %
3	Discharge	3.0	0.0	1.16	100.00%
4	Odour	2.0	0.0	0.76	100.00%
5	Granulation tissue	1.0	0.0	0.52	100.00 %

Graphical representation also shows a continued decrease in the mean scores for all parameters and confirmed that by Day 49 clinical outcomes are 98% to 100% effective. No recurrent signs, secondary infections, or further debridement were identified in one follow-up period. All wound parameters analyzed demonstrated significant change over the course of 49 days from the integrative treatment plan of topical Kampillaka Taila, internal Rasayana therapy and lifestyle modifications.

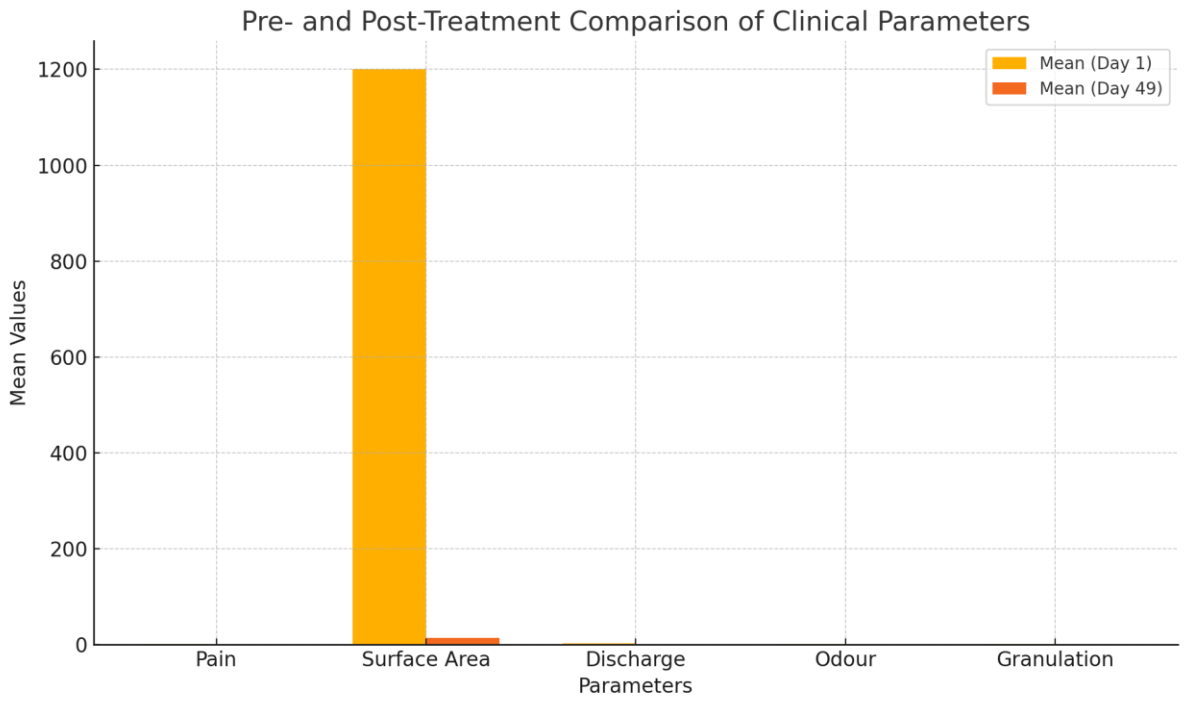


Figure 7. Pre and post treatment comparison of clinical parametres

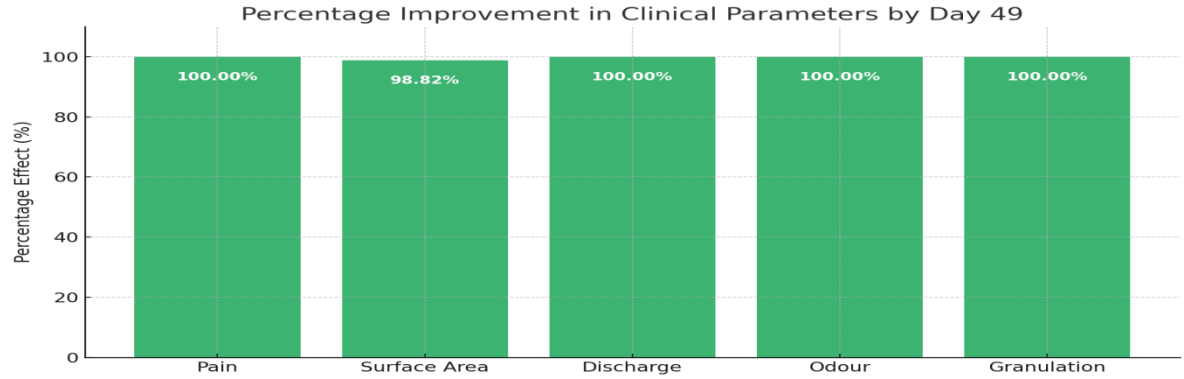


Figure 8. Percentage improvement in clinical parameters

Discussion:-

Integrative Holistic Wound Care in a Leprotic Ulcer:

This case shows how effective a thorough strategy can be in treating a chronic foot ulcer linked to leprosy. After the initial surgery to remove dead tissue and antibiotic treatment for the infection, the patient's plan combined Ayurvedicideas with modern wound care. Key aspects included using topical KampillakaTaila dressings, administering Rasayana therapy with Guduchi and Ashwagandha, and providing additional support measures like stress management through SatvavajayaChikitsa, a nutritional diet, and foot offloading. By treating the wound locally and improving the patient's overall healing ability and mental health, this approach created a favourable environment for recovery. The method draws from traditional Ayurvedic Vrana Chikitsa while connecting age-old wisdom with current surgical practices, illustrating how established knowledge can lead to new ideas in wound care.

KampillakaTaila – Traditional Wisdom and Wound-Healing Efficacy:

The topical use of KampillakaTaila, an herbal oil made from Mallotusphilippensis, also known as Kamala, played an important role in managing wounds. Ayurvedic literature praises Kampillaka as a "miracle remedy" for injuries. It falls under Sadharana Rasa and is known for its strong wound-healing and antimicrobial properties.

Mallotusphilippensis contains many bioactive compounds, such as flavonoids, tannins, and saponins, which offer anti-inflammatory and antimicrobial benefits. Applying this oil helps promote the growth of healthy granulation tissue and new skin cells. It improves local blood flow and keeps the wound moist and sterile. A pilot study on acute wounds found KampillakaTaila to be both safe and effective. Its benefits are related to strong anti-inflammatory, antimicrobial, and pain-relieving effects.

In this case, the wound's condition quickly improved after KampillakaTaila dressings were applied. Three weeks after beginning the oil treatment, the ulcer was filled with healthy granulation (as shown by those parameters scoring 0 by day 21) and all symptoms of infection and inflammation had all but vanished, including pain, discharge, and an unpleasant odor. The antimicrobial qualities of the oil probably kept the wound clean after debridement and avoided further infections.

Its tissue-regenerating and anti-inflammatory properties would have facilitated the ulcer's rapid contraction and epithelialization. Crucially, over the course of 49 days, the ulcer's surface area shrink by roughly 98.8% (from 1200 mm^2 to just 14.2 mm^2), with an average healing rate of roughly 24 mm^2 per day.This improvement demonstrates KampillakaTaila's efficacy as a natural wound-healing agent that supports the body's natural healing processes without the need for additional antibiotics or surgical debridement. Essentially, the herbal oil served as a bioactive dressing, continuously delivering antimicrobial and pro-healing agents to the wound site to sustain the healing process initiated by surgery.

Rasayana Therapy – Internal Rejuvenation and Immune Support:
Guduchi (Tinosporacordifolia) and ashwagandha (Withaniasomnifera) along with the Ayurvedic treatment Rasayana, both were taken orally. Rejuvenators such as rasayanas are thought to improve immunity, ability to regenerate, and ability to withstand stress. These herbs provided important systemic help for chronic wound healing.

Guduchi (Tinosporacordifolia):
Guduchiis a traditional Rasayanathat supports immunity and tissue repair. Ayurveda claims that it has vrana-rohana (wound-healing) properties and is a potent immunomodulator. Ancient surgeons were aware of its efficacy in healing wounds.Recent research has validated Guduchi's role in wound healing; in experimental models, Tinosporacordifolia extracts have demonstrated a significant improvement in wound healing, including increased granulation tissue production, reduced inflammation, and faster re-epithelialization. Its antimicrobial and anti-inflammatory qualities can help promote healing by lowering the bioburden on the wound bed. Along with KampillakaTaila's local action, Guduchimost likely improved the body's capacity for self-healing and the immune system's ability to prevent reinfection.

Ashwagandha (Withaniasomnifera):
Another popular Rasayana that reduces stress and increases energy is ashwagandha. Chronic wounds are considered a local pathology and stress to the whole person; systemic stress can impair wound healing. Increases in stress on the body and mind elevate cortisol and sympathetic neurotransmitter levels that are significantly decrease wound healing and could increase susceptibility to infection. Ashwagandha decreases stress and increases the immune system and healing hormones. Clinical studies have shown that administration of ashwagandha can decrease chronic stress levels and reduce serum cortisol. In addition, ashwagandha appears to have antioxidant and anti-inflammatory properties that could help support tissue healing. In the holistic treatment plan that was put in place, it is likely that ashwagandha helped reduce the patient's stress and the subsequent fatigue thereby indirectly hastening improved wound healing through neuroendocrine-immune regulation accelerating wound healing through neuroendocrine-immune modulation.

As internal co-therapies, guduchi and ashwagandha worked together to address systemic variables involved in the complex task of wound healing. Ashwagandha provides benefits in revitalizing & reducing stress and Guduchi provided immune system support, enhancing efficacy and supporting healing directly. In addition to facilitatively assisting tissue healing, this internal support likely improved the patient's energy, sleep, and overall sense of wellness throughout the healing process, which, although critical, are often overlooked treatment outcomes for wound healing.

Mind-Body Support and Lifestyle Interventions:
The incorporation of lifestyle and mind-body interventions into the treatment plan is particularly remarkable in this case demonstrating a truly holistic approach. The Ayurveda method of mind-control and psychological therapy, Satvavajaya Chikitsa was used to enable the patient to cope with the emotional burden of a chronic illness and a non-healing wound. As psychological stress has been scientifically demonstrated to have a real negative impact on wound healing physiology, stress management strategies (stress management counselling, meditation, or other mind-calming exercises) would have helped reduce anxiety and depression. Moreover, a motivated mentally balanced patient is more responsive to unloading the foot, maintaining hygiene in the wound area and adhering to dietary recommendations, thus psychosomatic support likely augmented patient compliance by keeping the patient upbeat and stress-free, as if an imaginary pharmacological intervention had a similar augmenting role in assistance with compliance.

The protocol also emphasized dietary nutrition and offloading, two pragmatic aspects of integrativecare:

- A balanced diet rich in proteins, vitamins A, C, and D, zincand other nutrients was recommended to provide the building blocks for tissue healing. The basis of wound healing is nutrition; for example: collagen formation requires sufficient protein, whilevitaminsC and zin care important for the immune system and tissue regeneration. In this specific case, providing the patient with a healthy diet that was perhaps modified for easy digestion and anti-inflammatory according to Ayurveda, would have hastened the healing of the ulcer and fortified the integrity of the skin to act as a food-based Rasayana.
- Offloading was used to relieve pressureto the plantar ulcer.Offloading,that is using rest,specialized foot wear or crutchestohalt further stress on the ulcerandallow healing, Because the patient's ulcer was in a weight-bearing location,offloading would preserve newly formed tissues since the ulcer would have broken down with anactivity patternof regular walking.

Results:-

Five Ayurvedic clinical parameters—VranaVedana (pain), VranaAkruti (surface area in mm^2), VranaStrava (discharge), VranaGandha (odor), and VranaVarna (granulation tissue appearance)—were used to assess the patient's wound healing progress. The initial assessment on Day 1 revealed a large, painful ulcer measuring atotal surface area of1200 mm^2, dusky granulation tissue, a foul odor, and moderate to copious discharge.All parameters showed consistent improvements with weekly assessments.

By Day 14, amoreorganized granulationt issue was encountered, and pain and discharge had decreased significantly.The wound surface area continuedto decrease by Day 21 to 571.4 mm^2 and all Vrana Vedana, Strava, Gandha and Varnawere resolved (all had a score of 0). By Day 49, KampillakaTaila application was consistent along with internal Rasayana therapy and lifestyle changes.The wound was nearly closed with only 14 .2 mm^2 of surface area remaining representing a98.82 % reduction of the surface area.

After 49days, the wound area decreased from 1200 mm^2 to 14.2 mm^2 (98.8 percent); pain, discharge, odor, and granulation all returned to normal by Day 21; the mean rate of healing was 24.2 mm^2/day (5.58 percent reduction per day); and there was no recurrence, reinfection, or need for second debridement.

Conclusion:-

- KampillakaTaila which integrates Ayurvedicteachings with contemporary surgery, wondrouslyac complished a safe, low-cost, and culturally aligned model for treating chronic wounds.
- Holistic tissue repairis accomplished when contemporary surgical methods are merged with Ayurvedictreatment.
- Complete closure of a wound, resolution of symptoms, and no recurrence or complications were obtained, which lends credence to the classical frame work of Vranachikitsaand avoids the need for futuresurgeries or extended antibiotics. A new biopsychosocial model for wound care emerged.
- Through an integrative and holistic approach, this study aids intreating the patient, not just the ulcer.

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