Panchkarma Protocol in the Management of *Kshina Shukra* (Oligospermia): A Case Report

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Abstract—**Background: Oligospermia, defined by subnormal sperm concentration, is one of the most common causes of male-factor infertility. Biomedical literature identifies oxidative stress, endocrine dysregulation, genitourinary inflammation, metabolic syndrome, and environmental exposures as central contributors to reduced spermatogenesis. Ayurveda conceptualizes similar clinical patterns under *Kshina Shukra* and *Shukravaha Srotodushti*, conditions attributed primarily to *Vata–Pitta* aggravation, impaired tissue metabolism (*Dhatvagni Mandya*), and depletion of *Shukra Dhatu*. Panchkarma, particularly *Basti* therapy along with *Rasayana* formulations, is traditionally recommended to restore reproductive tissue homeostasis. Objective: To evaluate integrative Ayurvedic therapeutic mechanisms in the management of oligospermia and present a case report demonstrating restoration of seminal concentration following a structured Panchkarma protocol. Methods: A comprehensive literature review was conducted examining biomedical and Ayurvedic evidence on male infertility. A case report of a 36-year-old married male with eight years of primary infertility and laboratory-confirmed oligospermia is presented. Treatment included *Haritakyadi Churna* for *Koshta Shuddhi*, followed by a 14-day Panchkarma regimen of *Saptaprasritika Niruha Basti* and *Tila Taila Anuvasana Basti* and subsequent administration of *Vrishya Ghrita*. Semen analyses from 21/07/2025 and 25/09/2025 were evaluated as primary outcome measures. Results: Sperm concentration increased from 14 to 60 million/mL following therapy, indicating substantial improvement in spermatogenesis. Motility and morphology showed modest positive shifts. No adverse events were noted. Conclusion: This case suggests that Panchkarma-based integrative therapy may enhance seminal concentration in oligospermia. Controlled trials are needed to validate clinical efficacy and elucidate mechanisms.**

Index Terms—**Ayurveda**, ***Basti***, **Oligospermia**, **Panchkarma**, ***Rasayana, Vajikarana*.**

I. INTRODUCTION

Male infertility is a growing global health concern, contributing to nearly half of all infertility cases among couples seeking conception (1). Oligospermia is defined by the World Health Organization (WHO) as a sperm concentration below 15 million/mL; is one of the most common abnormalities observed in semen analysis (2). Recent epidemiological studies estimate that 10–15% of men worldwide exhibit clinically relevant reductions in sperm concentration, with prevalence rising in regions undergoing rapid lifestyle and environmental changes (3,4). Increasing exposure to endocrine-disrupting chemicals, metabolic dysfunction, oxidative stress, and chronic psychosocial stress are now recognized as key contributors to declining male reproductive capacity (5-7).

From a biomedical perspective, oligospermia arises from disruptions in spermatogenesis, testicular microcirculation, oxidative balance, and hormonal regulation of the hypothalamic–pituitary–gonadal (HPG) axis. Increased reactive oxygen species (ROS) within seminal plasma damage sperm DNA, impair mitochondrial function and trigger apoptosis, all of which reduce the effective output of mature spermatozoa (8-10). In parallel, alterations in GnRH

pulsatility, suboptimal LH and FSH secretion, diminished intratesticular testosterone, and impaired Sertoli cell support contribute to inadequate spermatogenic efficiency (11). Environmental contaminants, including phthalates, bisphenol-A, and heavy metals; further inhibit steroidogenic enzymes and generate oxidative injury within reproductive tissues (12,13).

Ayurveda describes a clinically analogous condition known as *Kshina Shukra*, characterized by inadequate quantity and diminished vitality of semen. Classical texts such as the *Charaka Samhita* attribute *Kshina Shukra* to *Vata–Pitta* aggravation, depletion of *Shukra Dhatu*, and vitiation of reproductive channels (*Shukravaha Srotas*) (14). The Ayurvedic pathogenesis emphasizes systemic depletion, impaired tissue metabolism (*Dhatvagni Mandya*), and inadequate nutritive transformation across the successive *Dhatus*. These mechanisms correspond conceptually to the biomedical understanding of hormonal insufficiency, testicular oxidative stress, and disrupted spermatogenic microenvironment (15,16).

Therapeutically, Ayurveda recommends a sequenced approach: elimination of etiological factors, digestive-metabolic correction, purification of obstructed channels, *Vata*-pacification through Panchkarma: particularly *Basti* therapy and restoration of reproductive tissues with *Rasayana* formulations (17). Basti is described as the principal treatment for Vata disorders, and modern research suggests that medicated enemas may influence systemic physiology via gut–immune–neuroendocrine pathways, modulation of autonomic tone, microbial metabolites and anti-inflammatory signaling (18,19). These pathways are increasingly recognized as relevant to male reproductive homeostasis, given the emerging role of systemic inflammation, metabolic regulation and gut–testis interactions in spermatogenic function (20).

Rasayana therapies, including medicated *Ghritas* and botanical agents like *Withania somnifera* and *Tribulus terrestris*, have demonstrated antioxidant, androgen-modulating, and spermatogenic effects in contemporary pharmacological and clinical studies (21–22). Their lipid-rich matrices and bioactive phytochemicals may support membrane stability, steroidogenesis, and oxidative defence within testicular tissues.

Despite these scientific convergences, rigorously documented cases illustrating integrative Ayurvedic interventions for oligospermia remain limited. There is a need for detailed case reports that combine classical Ayurvedic diagnostic frameworks with objective biomedical outcomes such as WHO-standard semen analysis. This article contributes to this growing evidence base by presenting a comprehensive, integrative account of a 36-year-old male with longstanding oligospermia who underwent a structured Panchkarma protocol, resulting in marked improvements in sperm concentration and associated seminal parameters. The case is contextualized within broader Ayurvedic and biomedical literature to explore plausible mechanistic pathways underlying therapeutic effects.

II. METHODS

Literature Review Methodology

A narrative integrative review was undertaken to synthesize contemporary biomedical and Ayurvedic evidence relevant to oligospermia and *Kshina Shukra*. Peer-reviewed literature was identified through PubMed, Google Scholar and Scopus using combinations of search terms such as *"oligospermia," "male infertility oxidative stress," "spermatogenesis regulation," "Ayurveda Shukra Dhatu," "Kshina Shukra," "Panchkarma Basti fertility,"* and *"Rasayana reproduction."* The search encompassed publications from 1990 to 2024. Priority was given to clinical trials, mechanistic studies, systematic reviews, and well-established Ayurvedic textual commentaries. The objective was to contextualize the presented case within broader scientific and classical frameworks rather than conduct a systematic review.

Ayurvedic Textual Interpretation

Primary Ayurvedic sources including the *Charaka Samhita*, *Sushruta Samhita* and *Ashtanga Hridaya* were examined to elucidate traditional concepts of *Shukra Dhatu*, *Shukravaha Srotas*, and *Kshina Shukra*. Interpretive analysis followed standard hermeneutic reading, focusing on etiological factors, doshic involvement, and therapeutic principles relevant to male reproductive depletion. These textual insights were then compared with contemporary biomedical mechanisms—such as oxidative damage, endocrine regulation, and impaired testicular

microenvironment; to highlight conceptual convergence.

Case Report Documentation

This case was documented in accordance with CARE and AYUSH-CARE guidelines. Clinical findings, treatment procedures and patient responses were recorded contemporaneously during routine clinical care. All diagnostic and therapeutic decisions were individualized based on the patient's Ayurvedic constitution, presenting *Doshic* imbalance, and reproductive tissue depletion. The Panchkarma protocol—including *Haritakyadi Churna* for *Koshta Shuddhi*, *Saptaprasritika Niruha Basti* and *Tila Taila Anuvasana Basti*—was administered exactly as described in the patient's uploaded clinical record (). Follow-up *Rasayana* therapy with *Vrishya Ghrita* was added after the *Basti* sequence.

Laboratory Evaluation

Semen analysis served as the primary quantitative outcome measure. Tests were performed in an accredited diagnostic laboratory following WHO 2010 protocols. Baseline semen analysis (21/07/2025) and post-treatment analysis (25/09/2025) were extracted directly from the reports. Each report included assessment of semen volume, sperm concentration, motility subclassification and morphology according to standard criteria.

Ethical Considerations

Patient identity was fully anonymized. The treatments used are part of standard Ayurvedic practice and no experimental interventions were applied. The patient consented verbally to academic use of his anonymized data.

Case Description

A 36-year-old married male residing in Jaipur, employed in sedentary office work, presented to the Panchkarma outpatient department with an eight-year history of primary infertility. He reported no significant past medical illness, prior genital trauma, or systemic conditions such as diabetes, thyroid dysfunction, or varicocele historically associated with compromised spermatogenesis. Despite multiple prior therapeutic attempts across different medical systems, including empirical pharmacologic interventions and antioxidant supplementation, no sustained improvement in semen parameters had been documented. His chief concern remained persistently low sperm concentration on serial laboratory evaluations.

The patient reported moderate psychosocial distress related to prolonged infertility, including performance anxiety, diminished confidence, and concerns regarding marital expectations. Sleep was generally adequate, though occasionally disturbed by work-related stress. His diet consisted of mixed vegetarian and non-vegetarian foods, with irregular meal timings due to occupational demands. Physical activity was minimal.

Ayurvedic Assessment

According to the *Dashavidha Pariksha*, the patient exhibited a *Vata–Pitta* dominant constitution. His *Vikriti* reflected *Vata* aggravation with *Pitta* involvement, consistent with tissue depletion and internal dryness. *Sara* assessment suggested suboptimal *Mamsa* and *Shukra Sara*, indicating diminished tissue vitality. His *Samhanana* (body build) was moderate; however, he described chronic fatigue and reduced vigor, supporting the suspicion of *Shukra Dhatu Kshaya*. Digestive assessment revealed mild *Agnimandya* with intermittent bloating following heavy meals. *Satmya* indicated tolerance to a mixed diet, though cold and dry foods tended to aggravate *Vata*. Mentally, he displayed moderate *Satva* yet increased anxiety associated with reproductive concerns. His *Vyayama Shakti* was poor, correlating with low endurance and limited exercise habits. The overall Ayurvedic clinical profile aligned closely with classical descriptions of *Kshina Shukra* associated with *Vata*-dominant depletion and *Shukravaha Srotodushti*.

Clinical Findings

General physical examination revealed no abnormalities. Secondary sexual characteristics were normal. No signs of genital infection, epididymal tenderness, or palpable varicocele were present. Body mass index was within the normal range. Cardiovascular, endocrine, and neurologic examinations were unremarkable. The patient denied exposure to known reproductive toxicants, though he reported prolonged daily sitting and limited sun exposure.

Baseline Laboratory Findings

Semen analysis conducted on 21/07/2025 () revealed a sperm concentration of 14 million/mL, meeting WHO criteria for oligospermia. Total motility was 20%, with progressive motility measuring only 5%, and normal morphology was 10%. Although motility and morphology were below ideal ranges, the primary diagnostic classification remained oligospermia. Semen volume (4.0 mL) and pH (8.0) were within normal limits. Mild pyospermia (4-5 pus cells/hpf) was noted but without evidence of active infection.

The clinical presentation and laboratory profile were therefore consistent with oligospermia with associated qualitative seminal impairments, interpreted in Ayurvedic diagnostics as *Kshina Shukra* due to *Vata-Pitta* aggravation and reproductive tissue depletion.

Interventions

The therapeutic approach followed a structured Panchkarma sequence designed to address both the Ayurvedic diagnosis of *Kshina Shukra* and the biomedical condition of oligospermia. Treatment proceeded in accordance with classical guidelines emphasizing *Vata*-pacification, purification, channel clearance (*Srotoshodhana*), enhancement of metabolic fire and rejuvenation of reproductive tissues. The protocol comprised three stages: preliminary purification (*Purva Karma*), core Panchkarma procedures (*Pradhana Karma*) and post-procedural *Rasayana* therapy (*Paschat Karma*).

Preliminary Purification: *Haritakyadi Churna*

The intervention commenced with *Haritakyadi Churna* administered for three days to achieve *Koshta Shuddhi* (bowel cleansing). In Ayurvedic theory, correction of impaired digestive-metabolic function (*Agnimandya*) and elimination of accumulated *Ama* are prerequisites for restoring healthy reproductive tissue. *Haritaki* is known for its *Anulomana*, mild *Lekhana* and *Deepana-Pachana* effects, promoting gastrointestinal clearance and supporting metabolic reset.

From a biomedical standpoint, bowel cleansing and improved gut motility may influence systemic physiology through enhanced microbiome composition, reductions in endotoxin load, modulation of inflammatory mediators and improvements in nutrient absorption—all relevant to spermatogenesis, which requires optimal micronutrient availability (zinc, selenium, folate, vitamins C and E). Improved digestive function also aligns with evidence that gut–testis hormonal crosstalk affects reproductive hormone regulation through microbial metabolites and the enteroendocrine system.

Main Panchkarma Procedures: *Basti* Therapy

The primary therapeutic intervention consisted of a 14-day *Basti* sequence alternating between *Tila Taila Anuvasana Basti* and *Saptaprasritika Niruha Basti*, following the "A–S–S–A" patterned schedule typical of classical practice. The treatment cycle documented in the patient file reflects a balanced combination of unctuous and decoction-based enemas aimed at pacifying *Vata*, nourishing depleted tissues, and clearing obstructed reproductive channels.

Anuvasana Basti (*Tila Taila*)

Tila Taila (sesame oil) is traditionally described as *Balya*, *Brihmana*, *Vatahara* and *Shukra Vriddhikara*. Its lipid-rich composition allows deep tissue penetration and supports the unctuous, stabilizing functions required to counter *Vata*-driven depletion in *Kshina Shukra*. Sesame oil also contains lignans, tocopherols, and polyunsaturated fatty acids with antioxidant and anti-inflammatory properties, which may reduce oxidative stress in reproductive tissues.

Modern research demonstrates that gut-delivered lipid formulations influence systemic lipid metabolism, endocrine signaling, and vagal pathways, all of which potentially contribute to improved testicular steroidogenesis and membrane stabilization within developing spermatozoa.

Niruha Basti (*Saptaprasritika*)

Saptaprasritika decoction *Basti* is indicated for purification, *Vata*-pacification and rejuvenation. In classical descriptions, decoction *Basti* facilitates *Srotoshodhana*, enabling improved nutrient flow to the reproductive system while removing subtle blockages in the pelvic channels. By combining herbal decoctions, fats, honey and salt, *Niruha Basti* delivers both cleansing and nutritive effects.

Potential biomedical mechanisms include immunomodulation through colonic mucosal absorption, improved parasympathetic tone, reduction in systemic inflammatory cytokines, and enhanced blood flow to pelvic organs. These mechanisms align with evidence linking chronic inflammation and

impaired microcirculation to reduced spermatogenesis.

Post-Therapy *Rasayana*: *Vrishya Ghrita*

Following the *Basti* sequence, the patient was prescribed *Vrishya Ghrita* in a dose of 12 g daily with *Shali* rice as an adjuvant. *Rasayana* therapy is central to the restoration of depleted *Shukra Dhatu*, promoting tissue nourishment, sexual vitality and enhanced reproductive capability.

The ghee base provides a bioavailable medium for lipid-soluble phytochemicals. *Rasayana* herbs included in *Vrishya Ghrita*: such as *Ashwagandha*, *Shatavari* or *Kapikacchu* depending on formulations are known to support antioxidant defence, modulate reproductive hormones, improve mitochondrial function in germ cells, and enhance sperm membrane stability. Experimental studies show that *Ghrita*-based formulations can protect testicular tissue from oxidative injury, improve sperm output and enhance Leydig cell steroidogenesis.

Outcomes

Therapeutic response was assessed primarily through WHO-standard semen analyses performed before and after the Panchkarma protocol. The baseline semen evaluation, conducted on 21/07/2025, confirmed oligospermia with a sperm concentration of 14 million/mL. Total motility was recorded at 20% with only 5% progressive motility, and normal morphology measured 10%. Although motility and morphology were suboptimal, the defining pathological feature remained low sperm concentration. After completion of the Panchkarma regimen and subsequent *Rasayana* therapy, a second semen analysis on 25/09/2025 demonstrated striking improvement in seminal parameters.

Sperm concentration increased to 60 million/mL, representing more than a four-fold rise from baseline. This shift moves the patient clearly out of the oligospermic range and into normative sperm concentration according to WHO criteria. Total motility improved to 30%, and non-progressive motility increased proportionally; although progressive motility remained modest at 5%, the overall upward trend indicates an enhanced functional milieu for sperm viability. Normal morphology rose to 30%, suggesting improved spermatogenic maturation and reduced oxidative structural damage to developing spermatozoa.

These quantitative outcomes are illustrated in the figure-style summaries below.

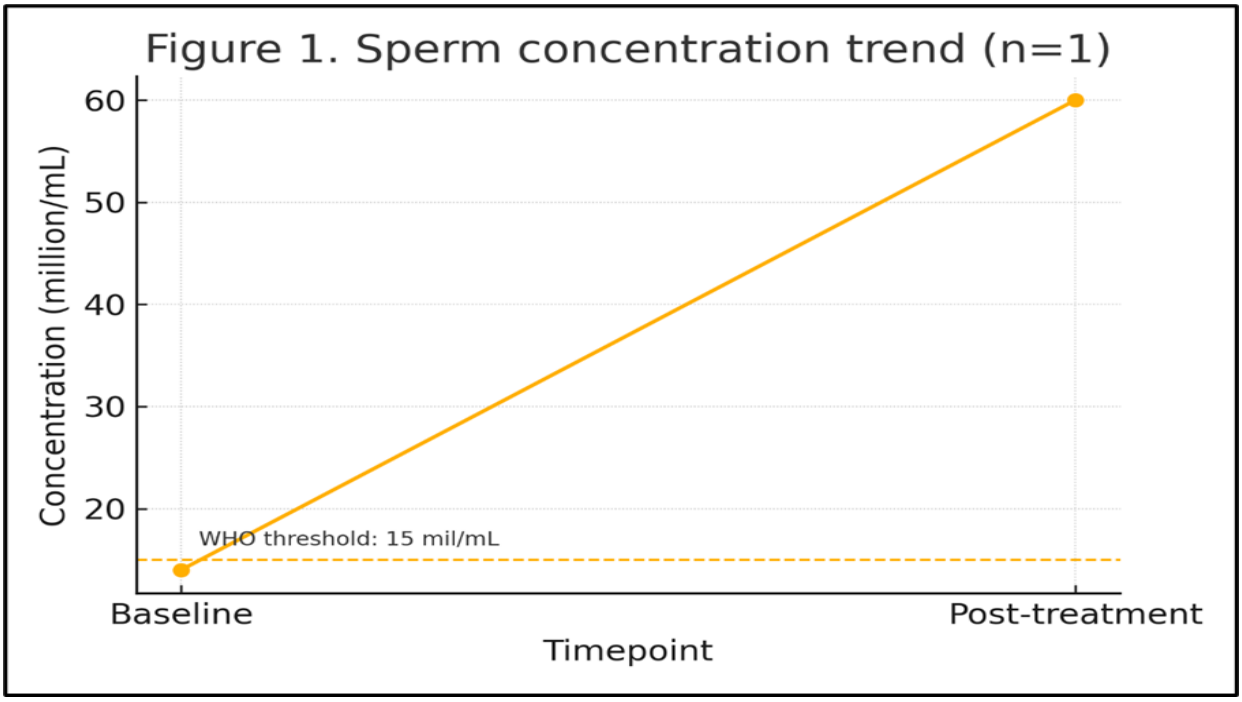

Figure 1 (Trend in Sperm Concentration) depicts a marked upward trajectory from 14 million/mL at baseline to 60 million/mL post-treatment, highlighting the most clinically significant improvement.

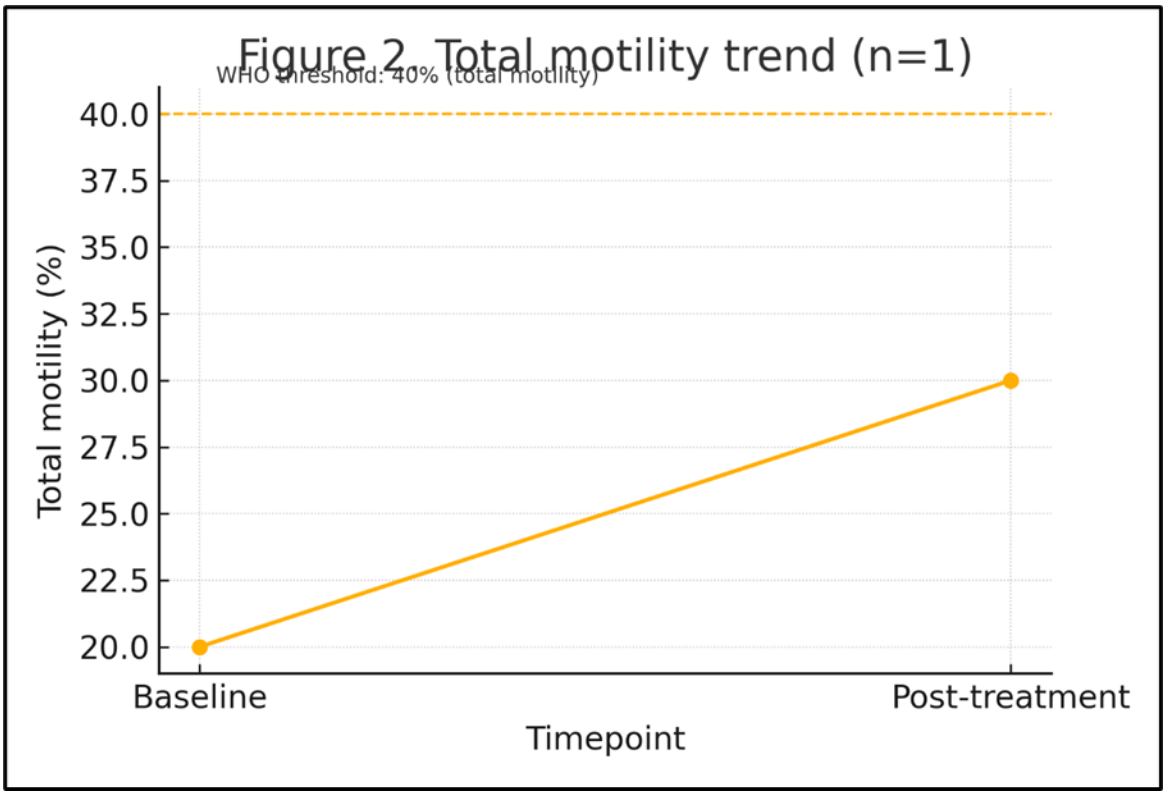

Figure 2 (Trend in Total Motility) shows a moderate but positive shift from 20% to 30%, suggesting improved mitochondrial function and membrane integrity.

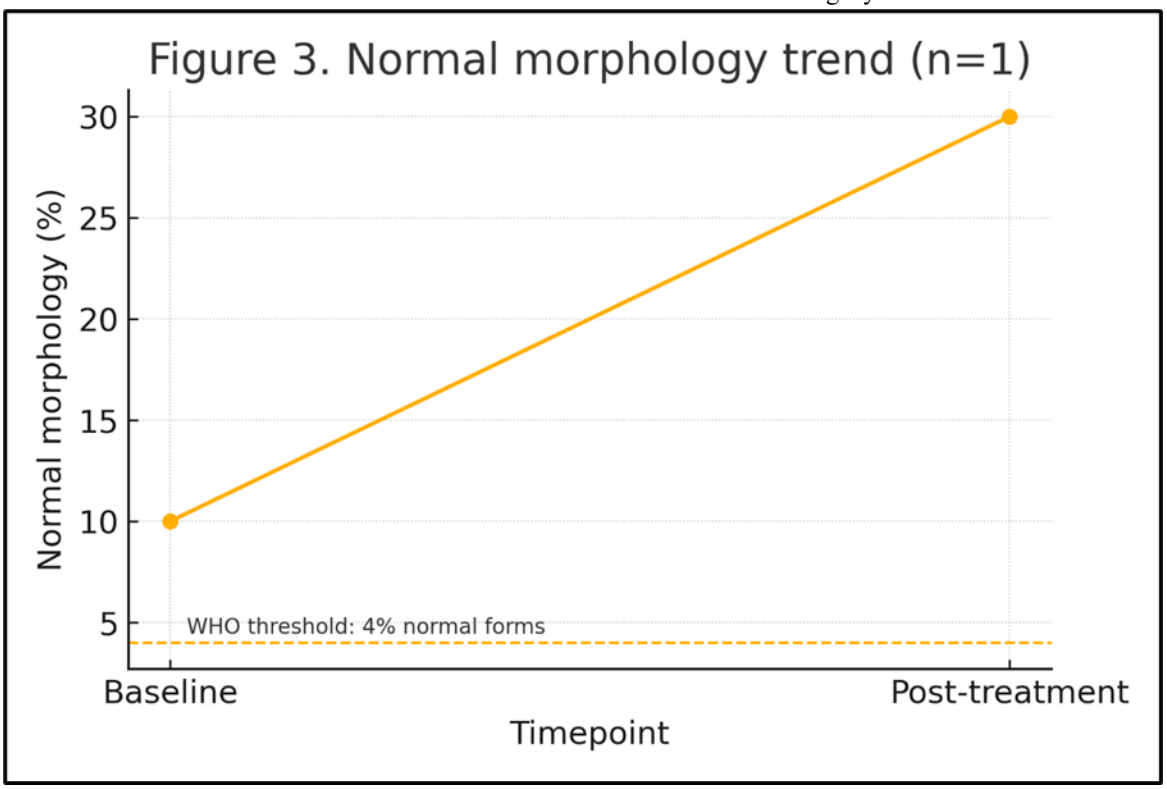

Figure 3 (Trend in Normal Morphology) captures the increase from 10% to 30%, which is meaningful given morphology's association with fertilization potential and chromatin stability.

From a biomedical viewpoint, these improvements may reflect reductions in oxidative stress, enhanced testicular microcirculation, modulation of endocrine regulatory pathways, and improved mitochondrial performance within developing germ cells. The increase in normal morphology is especially suggestive of mitigation of oxidative and inflammatory insults to sperm membranes and DNA, which frequently accompany idiopathic oligospermia. Ayurvedically, the results are consistent with the replenishment of *Shukra Dhatu*, pacification of *Vata*, and clearance of obstructions within *Shukravaha Srotas*. *Basti* therapy is held to regulate *Vata* at its principal site, thereby improving the subtle transport, nourishment, and homeostasis required for healthy reproduction. *Rasayana* therapy, particularly *Ghrita*-based formulations, contributes to tissue rejuvenation (*Dhatu Pushti*) and enhances the nutritive support essential for the continuous production of high-quality *Shukra*.

Importantly, the patient reported no adverse events during or after treatment, indicating good tolerability of the intervention. The combined objective improvements in seminal parameters and absence of complications underscore the therapeutic potential of a well-structured Panchkarma and *Rasayana* protocol in cases of oligospermia accompanied by *Kshina Shukra*. These changes also demonstrate the plausibility of Ayurvedic mechanisms when interpreted through contemporary biomedical frameworks.

III. DISCUSSION

The present case demonstrates a clinically meaningful improvement in sperm concentration and seminal quality following an integrative Ayurvedic Panchkarma protocol in a patient with long-standing oligospermia. Oligospermia is widely recognized as a multifactorial disorder involving oxidative stress, endocrine dysregulation, impaired testicular microenvironment and lifestyle contributors (1–4). Contemporary biomedical studies consistently show that reduced sperm concentration is strongly correlated with increased reactive oxygen species (ROS), mitochondrial dysfunction, lipid peroxidation and compromised chromatin integrity (5,6). In this context, the four-fold rise in sperm concentration observed after treatment—from 14 million/mL to 60 million/mL—suggests a substantial improvement in spermatogenic activity and testicular function.

The therapeutic protocol utilized in this case combines three central Ayurvedic principles: purification (*Shodhana*), *Vata*-pacification, and tissue rejuvenation (*Rasayana*). According to classical descriptions, *Kshina Shukra* arises from Vata aggravation, reproductive tissue depletion, and obstruction or vitiation of *Shukravaha Srotas* (14,15,16). The improvement seen here is consistent with the classical expectation that *Basti* therapy supports *Vata* regulation at its primary site and helps restore the integrity of reproductive pathways. The alternation of *Niruha* and *Anuvasana Basti*, using *Saptaprasritika* decoction and *Tila Taila* respectively, reflects classical *Basti* sequencing designed to achieve both cleansing and nutritive effects. Sesame oil's unctuous, stabilizing qualities counteract *Vata's* drying and dispersing tendencies, while decoction *Basti* promotes channel clearance and metabolic normalization.

Recent biomedical analyses provide plausible mechanistic interpretations for these outcomes. Medicated enemas administered during *Basti* therapy may influence systemic physiology via mucosal immune modulation, shifts in gut–microbial metabolites, vagal stimulation and improvements in autonomic balance (17,18,19). These mechanisms can indirectly affect testicular circulation, hormonal regulation and systemic oxidative tone—factors central to spermatogenesis. Enhanced parasympathetic activity has been shown to improve gonadal blood flow and HPG axis signaling, while gut-mediated immunological pathways may reduce systemic inflammation detrimental to sperm development (20,21).

The post-*Basti* administration of *Vrishya Ghrita* likely contributed to the observed improvements. *Rasayana* formulations enriched with lipophilic phytochemicals have demonstrated antioxidant, androgen-enhancing, and spermatogenic properties in experimental and clinical studies (22–23). *Ghrita*-based preparations improve the bioavailability of herbal actives and may support mitochondrial function and cell membrane stability in developing germ cells. The increase in normal morphology from 10% to 30% in this case aligns with evidence that *Rasayana* herbs reduce oxidative membrane damage and DNA fragmentation. The absence of adverse events indicates good tolerability. However, as a single-patient report,

generalizability is limited. Natural variability in semen parameters cannot be entirely excluded, though the magnitude and consistency of improvement across concentration, motility and morphology strongly suggest therapeutic benefit.

Overall, the combined Ayurvedic and biomedical frameworks provide a coherent explanation for the improvements seen in this case. These findings highlight the potential of Panchkarma-based integrative treatments in managing oligospermia associated with *Kshina Shukra*, while underscoring the need for larger controlled trials to further validate efficacy, mechanisms and reproducibility.

IV. CONCLUSION

The present integrative case analysis indicates that a structured Panchkarma protocol: comprising *Haritakyadi Churna* for *Koshta Shuddhi*, followed by a sequenced *Basti* regimen and *Rasayana* therapy—may meaningfully improve seminal concentration in patients with oligospermia associated with *Kshina Shukra*. The four-fold rise in sperm concentration (from 14 to 60 million/mL) and associated improvements in motility and morphology suggest a clinically relevant enhancement of spermatogenic function. These outcomes align closely with classical Ayurvedic expectations regarding the restoration of *Shukra Dhatu* through *Vata*-pacification, *Srotoshodhana*, and *Rasayana*-mediated tissue rejuvenation.

Biomedical evidence provides plausible mechanistic support for these observations. Improvements in spermatogenesis may derive from reductions in oxidative stress, enhanced testicular microcirculation, improved mitochondrial function, modulation of the hypothalamic–pituitary–gonadal axis, and systemic anti-inflammatory effects. Furthermore, the gut-mediated neuroimmune pathways implicated in *Basti* therapy offer an emerging scientific framework that parallels classical Ayurvedic descriptions of systemic *Vata* regulation.

While the magnitude of improvement in this case is encouraging, inherent limitations include the absence of a control group, potential inter-sample variability, and the single-patient design. Nonetheless, the convergence of clinical outcomes, Ayurvedic theory, and biomedical plausibility provides a strong rationale for future controlled investigations. Rigorous clinical trials integrating standardized Panchkarma protocols, validated semen parameters, endocrine markers, oxidative stress assays, and molecular endpoints are needed to further evaluate the therapeutic potential of Ayurveda in oligospermia.

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