

Effect of a 25-Day Structured Yoga Therapy Program on a Small Paraumbilical Hernia: A Single-Case Clinical Report

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Abstract: Paraumbilical hernias occur due to a defect in the anterior abdominal wall near the umbilicus, frequently associated with central obesity, weak fascial support, and increased intra-abdominal pressure. Conservative approaches are rarely documented in scientific literature, although small and reducible hernias may benefit from non-surgical supportive therapies. This case study reports the anatomical and functional improvements observed in a 35-year-old female who underwent a supervised 25-day yoga therapy program (1 hour/day). Outcomes included a reduction of hernia defect size from 10 mm to 5 mm, abdominal circumference reduction from 108 cm to 97 cm, and weight reduction from 63 kg to 58 kg. This case provides preliminary evidence that appropriately modified yoga therapy may support abdominal wall function, reduce intra-abdominal pressure, and positively influence small paraumbilical hernias. Controlled trials are required to substantiate these outcomes.

Keywords: Paraumbilical hernia, abdominal wall defect, yoga therapy, conservative management, core stability, case report

1. Introduction

Paraumbilical hernias develop due to a defect in the linea alba adjacent to the umbilicus, allowing preperitoneal fat or bowel loops to protrude (Asaad et al., 2020). Risk factors include increased body mass index (BMI), pregnancy, weak connective tissues, chronic coughing/straining, and poor core muscle activation (LeBlanc & Kingsnorth, 2014). Management traditionally involves surgical repair; however, small, reducible hernias may be managed conservatively when symptoms are mild and complications are absent.

Yoga therapy has been shown to positively influence multiple physiological domains relevant to hernia management, including:

- **Strengthening the transversus abdominis and core** (Cortis et al., 2020)
- **Optimizing breathing patterns**, thereby reducing intra-abdominal pressure (Hodges & Gandevia, 2000)
- **Reducing visceral fat and improving body composition** (Cramer et al., 2016)
- **Facilitating fascial remodeling and elasticity** (Schleip & Müller, 2013)
- **Reducing stress and cortisol**, which indirectly influences central adiposity (Ross & Thomas, 2010)

Despite these mechanisms, literature directly addressing yoga intervention for abdominal hernias is scarce. This report documents structural and functional changes following a 25-day intervention.

2. Patient Information

A 35-year-old female presented to a yoga therapy clinic with progressive abdominal obesity for 6 years and mild intermittent discomfort around the umbilical region.

Baseline characteristics

Variable	Value
Age	35 years
Sex	Female
Height	155 cm
Weight	63 kg
BMI	26.2 kg/m ² (Overweight)
BMR	1,257 kcal/day
Chief concern	Central obesity, mild hernia-related discomfort
Past medical history	Unremarkable
Physical activity	Sedentary
Hernia type	Small paraumbilical hernia (10 mm)

3. Clinical Findings (Pre-Intervention)

3.1 Ultrasound abdomen & pelvis (Before Yoga Therapy)

- Fascial defect noted: **10 mm** around umbilical region
- Herniation of **preperitoneal fat**
- No bowel herniation
- No signs of incarceration or strangulation

3.2 Physical Examination

- Abdominal circumference: **108 cm**
- Bulge increased during coughing but fully reducible
- No tenderness
- Core muscle weakness noted
- Mild lumbar hyperlordosis indicating abdominal wall laxity

These findings indicated that the patient was stable, suitable for **non-surgical conservative management** with careful monitoring.

4. Yoga Therapy Intervention

A **25-day structured yoga therapy program**, 1 hour daily, supervised by a certified yoga therapist.

Therapeutic goals:

- Reduce intra-abdominal pressure
- Strengthen deep core musculature
- Improve fascial tension around the linea alba

- Reduce abdominal girth and overall weight
- Improve breathing efficiency and stress control

4.1 Daily Yoga Therapy Structure (60 minutes)

Duration	Component	Description	Therapeutic Rationale
10 min	Breath Awareness & Diaphragmatic Breathing	Supine breathing, thoracic–abdominal coordination	Reduces intra-abdominal pressure; retrains diaphragm; enhances core reflex activation
10 min	Gentle Abdominal Activation	Pelvic tilts, abdominal draw-ins, modified Pavanamuktasana	Activates transversus abdominis without excessive strain
20 min	Selected Āsanas	Cat–Cow, Setu Bandhasana, modified Trikonasana, Bhujangasana	Improves abdominal wall tone, spinal alignment, fascia elasticity
10 min	Prāṇāyāma	Anuloma–Viloma, Bhramari	Reduces cortisol, modulates autonomic balance
10 min	Guided Relaxation	Yoga Nidra / breath-based meditation	Supports metabolic regulation, reduces stress-related fat deposition

4.2 Safety Protocol

- No Kapalabhati, Bhastrika, strong Uddiyana Bandha
- No deep forward bends or abdominal crunches
- No breath-holding
- Continuous monitoring for hernia bulging or pain

The program was individually prescribed and progressively adapted.

5. Outcomes (Post- Intervention)

5.1 Post-Therapy Ultrasound Report

- Fascial defect reduced from **10 mm** → **5 mm**
- Preperitoneal fat still present, but decreased protrusion
- No complications observed

5.2 Anthropometric Changes

Parameter	Before	After	Improvement
Weight	63 kg	58 kg	–5 kg
Abdominal circumference	108 cm	97 cm	–11 cm
BMI	26.2	24.1	Reduced toward normal

5.3 Patient-Reported Outcomes

- Reduced visible bulging
- Improved posture and core stability
- Better breath control
- Decreased heaviness in abdomen
- Improved energy and digestion

6. Discussion

This case demonstrates measurable structural improvement in a small paraumbilical hernia following a structured yoga therapy program. While surgery remains standard treatment for large or symptomatic hernias, small and reducible hernias may benefit from strengthening and pressure-modulating practices.

6.1 Possible Mechanisms Behind Improvement

- Transversus Abdominis Strengthening:** Yoga-based core activation enhances corset-like stability around the hernia site (Cortis et al., 2020).
- Reduced Intra-Abdominal Pressure:** Diaphragmatic breathing regulates abdominal pressure fluctuations (Hodges & Gandevia, 2000), reducing hernia protrusion.
- Weight and Central Fat Reduction:** Daily yoga can significantly reduce abdominal fat (Cramer et al., 2016), decreasing mechanical load on the linea alba.
- Fascial Remodeling:** Slow stretching and controlled movement hydrate fascia, increase collagen alignment, and enhance elasticity (Schleip & Müller, 2013).
- Improved Stress Regulation:** Yoga Nidra and pranayama reduce cortisol and sympathetic activity (Ross & Thomas, 2010), which indirectly supports metabolic balance.

These interconnected mechanisms likely contributed to improvements in defect size and abdominal circumference.

7. Strengths and Limitations

Strengths

- Objective imaging used pre- and post-intervention
- Continuous therapist supervision ensured safety
- Comprehensive multi-modal yoga protocol

Limitations

- Single-case design limits generalizability
- No long-term follow-up
- Diet was not strictly controlled
- Natural measurement variability in ultrasound reading (~1–2 mm)

8. Conclusion

This case provides evidence that a **carefully modified and clinically supervised yoga therapy program** can support the management of small paraumbilical hernias, improving core strength, reducing abdominal circumference, and enhancing functional stability. Although surgery is the standard treatment for larger or symptomatic hernias, yoga may be a valuable **adjunctive conservative approach** in selected patients. Further controlled clinical trials are required to validate these findings.

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