



Biologic Optimization in Minimally Invasive Surgery

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Where Innovation Meets Movement

Why Change the Algorithm

From precision correction → cellular restoration

- ✓ MIS surgery repairs structure – outcomes depend on biology
- ✓ Patients expect faster recovery, less pain, fewer setbacks
- ✓ "We can now control not only how we cut – but how we heal."



The Align Regenerative Model



Pre-Op

BPC-157 tissue priming



Intra/Post-Op

Umbilical Allograft
implantation



Recovery

ESWT & Class IV Laser + Daily
Home PBM

Goal: Reduce inflammation → enhance collagen → accelerate recovery

A microscopic image of tissue, likely skin, showing a dense network of cells. The cells are stained, with some appearing in shades of blue and purple, and others in shades of red and pink. The overall appearance is that of a complex, interconnected cellular structure, possibly representing a site of chronic inflammation or a surgical site.

Pre-Op Optimization: Why Prep the Tissue

Most inflammation is chronic before incision

BPC-157 promotes angiogenesis, fibroblast migration, collagen repair

Creates a "biologically primed" surgical environment

Key Evidence (BPC-157)

Study	Finding	Clinical Relevance
Gori 2003	↑ Tendon strength, organized collagen	Stronger connective repair
Vukojević 2010	↑ Fibroblast migration, FAK/paxillin activation	Accelerates incision healing
Front Pharmacol 2021	Angiogenic, anti-inflammatory, cytoprotective	Improves post-op recovery

Gori et al., 2003 J Orthop Res – ↑ Achilles tendon healing (stronger biomechanics).

Vukojević et al., 2010 J Appl Physiol – ↑ fibroblast migration via FAK/paxillin.

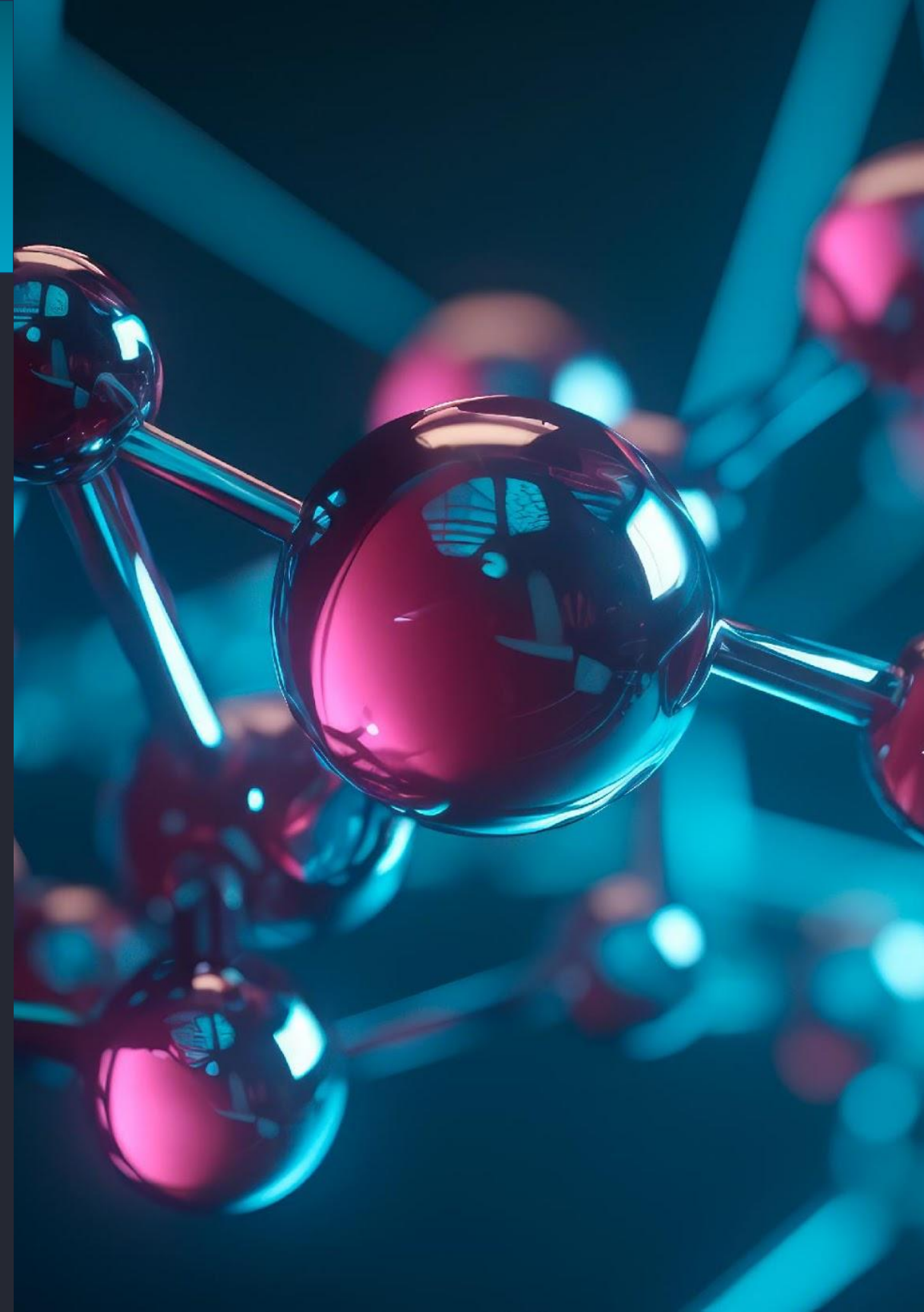
Front Pharmacol 2021 Review – angiogenic and anti-inflammatory mechanisms.

Align Pre-Op Protocol

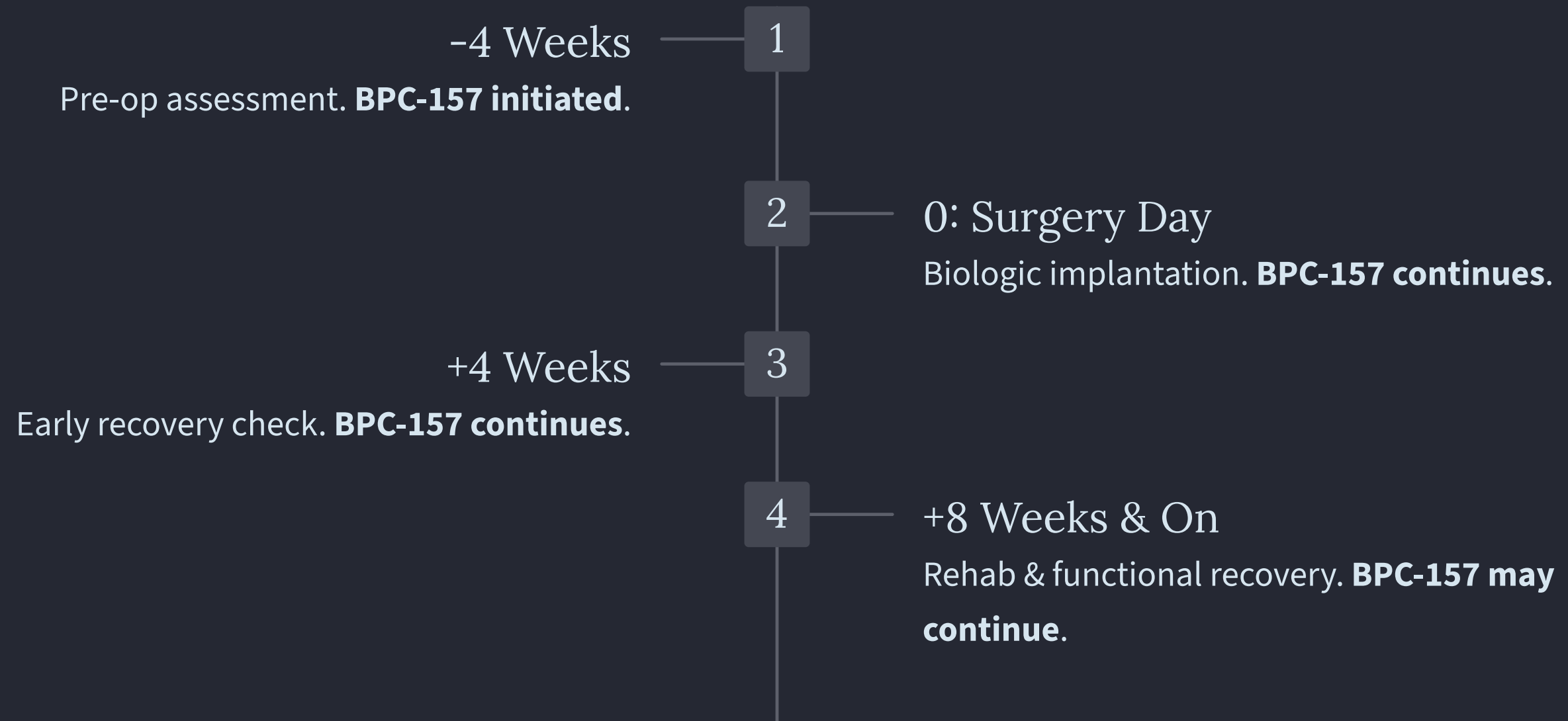
- Oral **BPC-157**
4 weeks pre-op → continue 8 weeks post-op
- Add **EBM-S4** for bone support
- Offered as **cash-based Surgical Upgrade Program**

Talking Points:

- "Peptides prepare your body to heal stronger and faster."



Treatment Progression Timeline



Highlight peptide continuation
through entire recovery

Intra- & Post-Op Biologic Implantation

Umbilical Cord Allograft Applications

Bunionectomy · Metatarsal Osteotomy ·
Hammertoe · Plantar fascia · Achilles · Neuroma

**Provides: Collagen matrix + natural
cytokines +
structural support
Optimizes Surgical Microenvironment**

(Looney et al., Cells 2019 – ASA enhanced Achilles repair in rats)

(Nakagawa 2022 JFASAP – pain and function improved in foot & ankle applications)



Supporting Evidence

Study	Model / Setting	Key Findings
Forbes 2024 (Injury)	Review	↓ Inflammation, ↑ Remodeling
Looney 2019 (Cells)	Rat Achilles	Early collagen alignment
Nakagawa 2022 (JFASAP)	Foot/Ankle	↓ Pain, ↑ Function

Summary: Shifts healing from reactive scarring → regenerative remodeling

Technique & Integration

1

Inject or implant 3 cc umbilical graft intra-op

2

Apply at osteotomy, tendon, capsule, or closure site

3

Percutaneous: fan around target tendon/nerve

Biologic Synergy: BPC-157 primes → Allograft provides → Laser/ESWT perpetuates

Patient Language



"We use a biologic implant derived from umbilical cord tissue — rich in natural healing factors."

"It's not just stem cells — it's your own biology, amplified."

Post-Op Regenerative Therapies: Shockwave

Mechanism:

Mechanotransduction \rightarrow \uparrow VEGF \rightarrow Angiogenesis, Collagen Remodeling

Enhances soft-tissue repair.

Stimulates bone healing across musculoskeletal conditions.

Protocol:

- Start 7 days post-op
- 5 sessions \times 1000 impulses
- 5 sessions \times 1000 impulses



Shockwave Evidence

Study / Citation	Summary of Findings	Clinical Takeaway
Wang CJ et al., 2012 J Orthop Surg Res 7:11	Review of musculoskeletal applications of ESWT. ↑ VEGF & eNOS expression → angiogenesis and collagen remodeling. Improved pain and function in chronic tendinopathies.	Supports ESWT's biologic mechanism: mechanotransduction-driven tissue regeneration and faster recovery.
Schmitz C et al., 2015 Br Med Bull 116:115–138	Systematic review of 45 RCTs. Confirmed ESWT efficacy and safety across multiple orthopedic conditions.	High-level evidence validating ESWT as an effective, safe modality for post-op healing support.

Post-Op Regenerative Therapies: Class IV Laser

Mechanisms:

- ↑ ATP production & fibroblast activity
- ↓ Oxidative stress & cytokines
- ↑ Microvascular flow & collagen synthesis

Protocol:

- 1 session/week × 6 weeks
- 808 + 905 nm | 8–12 J/cm²
- Incision and Osteotomy Sites

Evidence:

- *Momenzadeh 2024*: Faster wound closure, less pain
- *HILT 2023*: Improved chronic wound healing



Home Photobiomodulation

Dual wavelength
LED: **635, 670, 810,
850 nm**

10–15 min daily
× 6 weeks

**Maintains mitochondrial activation
between visits**



Healing Timeline (Align Protocol)

Phase	Weeks	Focus	Tools
Pre-op	-4 → 0	↓ Inflammation	BPC-157 + PBM
Immediate	0 → 2	Allograft take / pain ↓	Allograft + Laser + ESWT
Remodeling	2 → 6	Collagen alignment	Laser + BPC-157
Return	6 → 12	Strength & load	BPC-157 + PBM

Communicating Value

"Insurance covers the repair
– regenerative options cover
your recovery."

Focus on: Science → Safety → Speed



Cash Program & Workflow

- Presented as flat-rate cash package
- Auto-generate laser/ESWT schedule in pre-op checklist & MA scripts

☐ **Regenerative Surgery Package:**
BPC-157 + Umbilical Allograft + 6 Laser + 5 ESWT + Home PBM



Staff Messaging

"This is our standard healing protocol – it helps patients recover faster and with less pain."



Summary

The Align Regenerative Algorithm

Prepare → Repair → Protect → Promote

(BPC-157 → Allograft → ESWT/Laser → PBM)

Quick Start Checklist:

- ✓ Identify pre-op candidates
- ✓ Add allograft to tray
- ✓ Schedule post-op laser

Closing Q&A



"At Align Foot & Ankle, regeneration isn't a trend — it's our standard of care."

References

Gori 2003 · Vukojević 2010 · Front Pharmacol 2021

Forbes 2024 · Looney 2019 · Nakagawa 2022

Wang 2015 · Momenzadeh 2024 · HILT 2023

