



Unstable Kyphosis in Dogs

Quick Take

Kyphosis means an **abnormal, excessive upward curvature of the spine** — often seen in the mid-back (thoracic) region.

In dogs, particularly **French Bulldogs, Pugs**, English Bulldogs, Boston Terriers, and other brachycephalic or screw-tailed breeds, this can be caused by **congenital vertebral malformations** (deformed vertebrae such as hemivertebrae).

When the curvature becomes **unstable or compresses the spinal cord**, it can cause **pain, weakness, or paralysis** — often at a young age (4–18 months).

Surgery is indicated for dogs with neurologic deficits or spinal instability, while **mild, non-progressive cases may be managed conservatively**.

1) What's going on inside?

Normal spine

The vertebral column is made of individual bones stacked in alignment, protecting the spinal cord and allowing flexibility and support.

In kyphosis

- A **congenital defect in one or more vertebrae** (such as wedge-shaped or butterfly vertebrae) causes abnormal curvature of the spinal column.
- This curvature creates **mechanical stress and instability**.
- The **spinal cord** can become **pinched, twisted, or stretched**, especially if vertebrae above and below the curve move abnormally.

When it becomes “unstable”

Unstable kyphosis means:

- The malformed segment is **no longer biomechanically stable**.
- There may be **progressive deformity, cord compression**, or shifting over time.
- The result is **neurologic decline (ataxia, weakness, paralysis)**.

2) Causes and risk factors

- **Congenital vertebral malformations** (hemivertebra, block vertebra, butterfly vertebra) — most common.
- **Breed predisposition**: French Bulldog, Pug, Boston Terrier, English Bulldog.
- **Developmental progression**: as puppies grow, malformed vertebrae cause curvature to worsen.
- **Trauma**: can destabilize a previously stable kyphosis.
- **Secondary degeneration**: chronic misalignment → arthritis → further instability.



3) What owners notice

Early signs

- Stiff, wobbly, or uncoordinated gait (especially in hind limbs)
- Back pain, arching, or hunched posture
- Reluctance to run, jump, or climb
- Bunny-hopping gait
- Falling or knuckling of hind paws

Progressive/advanced signs

- Dragging rear legs or complete paralysis
- Incontinence (loss of bladder/bowel control)
- Sudden worsening after minor trauma or play
- “Dropped” stance or severe spinal deformity

The condition often **progresses gradually**, but can **acutely worsen** if the vertebral alignment fails.

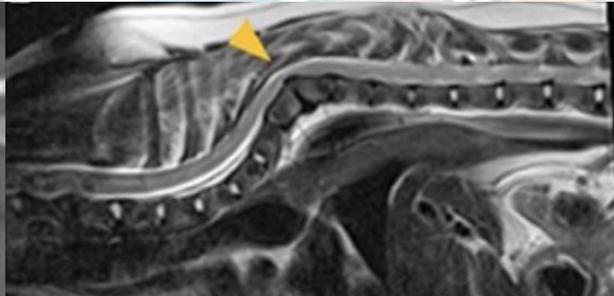
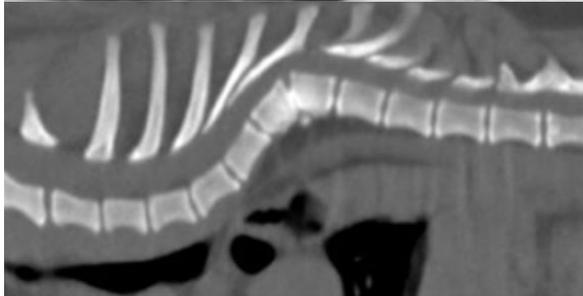
4) Diagnosis

Step 1: Neurologic exam

Localizes the problem to a **spinal region** (often mid-thoracic to lumbar). Pain in the affected region or wobbliness/weakness of the hind limbs.

Step 2: Imaging

- **X-rays:** show vertebral shape and curvature (often S- or wedge-shaped deformities).
- **CT scan:** defines bony structure and degree of deformity.
- **MRI:** essential to evaluate spinal cord compression and soft-tissue changes.
- **Dynamic radiographs** may show instability during flexion/extension.





Step 3: Classification

Veterinarians may describe the curvature by Cobb angle or degree of displacement, and grade the neurologic deficits (from mild wobbliness to paralysis).

5) Treatment overview

A) Conservative management

Indicated for:

- Mild deformity
- No or minimal neurologic signs
- Stable vertebral alignment

Methods:

- **Strict activity control** (avoid jumping or rough play)
- **Pain control** (NSAIDs, gabapentin)
- **Physiotherapy** for core strength and stability
- **Harness support** (never neck collars)
- **Regular imaging** to monitor progression

+ : Good for mild, non-progressive cases

- : Ineffective for instability or progressive spinal cord compression

B) Surgical stabilization (for unstable or neurologic cases)

Goal:

To **stabilize the deformed spine, realign the vertebrae, and relieve spinal cord compression.**

Common procedures

Surgery typically combines **decompression (if cord is compressed) with stabilization/fusion.**

Surgical technique	Description	Purpose
Dorsal stabilization with pins/screws and bone cement (PMMA)	Implants placed across affected vertebrae to fuse them	Provides rigid fixation
Pedicle screw-rod fixation (PSRF)	Advanced system using screws and rods similar to human spinal surgery	Offers superior strength and precision
Vertebral body fusion (arthrodesis)	Bone grafts promote permanent fusion between vertebrae	Long-term stability
Decompression (hemilaminectomy)	Removes bone pressing on spinal cord	Relieves direct compression before fusion

6) Surgical planning and anaesthesia

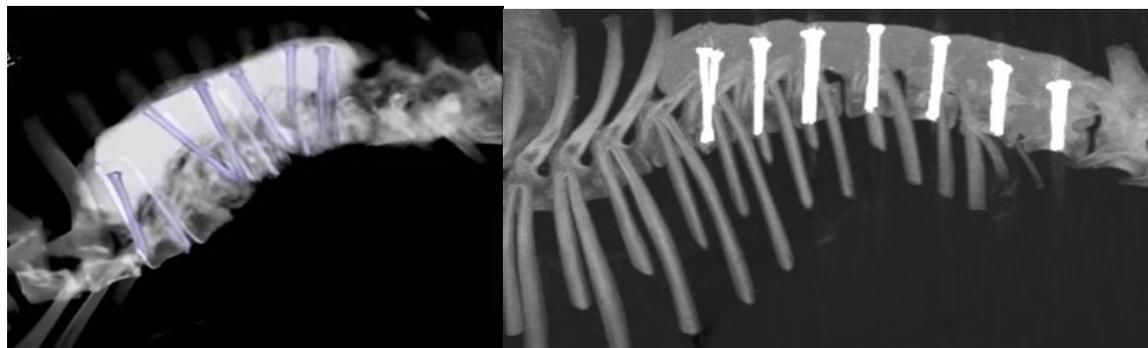
- **CT or MRI-guided 3D planning** improves safety and implant accuracy.
- Custom implants can be ordered a few weeks in advance.



- Dogs are carefully anesthetized and positioned to avoid further cord injury.

Surgery time: 2–3 hours

Hospital stay: 3–7 days for monitoring, pain control, and physiotherapy start.



7) Outcomes and prognosis

Clinical status before surgery	Prognosis after stabilization	Notes
Mild ataxia, walking	Excellent (80–95%)	Most return to normal function
Moderate weakness	Good (70–85%)	Recovery over 2–3 months
Non-ambulatory but deep pain present	Fair (60–70%)	Many regain mobility with rehab
Paralysis with no deep pain	Guarded (<40%)	Permanent deficits possible
Stable, no neuro signs (preventive surgery)	Excellent	Prevents future collapse

Cats: kyphosis is rare but outcomes are similar when surgically treated early.

Post-op dogs often walk within 2–6 weeks, with full recovery by 2–3 months if spinal cord damage wasn't severe.

8) Complications and realistic rates

Complication	Approx. rate	Notes
Implant loosening or breakage	10–20%	Higher in young or very active dogs
Surgical site infection	5–10%	Controlled with antibiotics
Persistent or recurrent pain	10-15%	Often resolves with rehab
Neurologic worsening post-op	5–10%	Usually temporary; sometimes permanent
Failure of bone fusion	5–10%	May require revision
Death (perioperative)	2–5%	Rare in the hands of a specialist



Success rate: 75–90% improvement in neurologic function reported in published case series (e.g., Charalambous et al., Vet Surg, 2014).

9) Recovery & rehabilitation

In hospital

- Pain management (opioids, gabapentin)
- Controlled movement in padded enclosure
- Bladder care if paralyzed

At home

Phase	Timeframe	Focus
Phase 1	0–4 weeks	Strict rest, short assisted potty walks, incision care
Phase 2	4–8 weeks	Passive range of motion, supported standing, laser/hydrotherapy
Phase 3	8–12 weeks	Gradual return to activity, supervised strengthening
Phase 4	3–6 months	Normal play resumed cautiously

Harness use only (no collars).

Physical therapy (especially hydrotherapy) is **critical** to regain coordination and muscle tone. Get in touch with a trained Physiotherapist!

10) Long-term management & prevention

- Avoid jumping, stairs, or rough play long-term.
- Keep lean body weight to minimize stress on the spine.
- Use ramps and harnesses instead of lifting by the front legs.
- Follow-up X-rays/CT every 6–12 months for implant check.
- Continue core-strengthening and gentle exercise lifelong.

11) Questions to ask your surgeon

- How severe is my dog's spinal deformity and instability?
- Is surgery essential now, or can we monitor safely?
- Which stabilization method will you use (pins, rods, plates)?
- Will you perform decompression as well?
- What is the success rate and recovery time for similar cases?
- What are the activity restrictions after surgery?
- Will rehabilitation be needed, and where can we do it?

12) Veterinary references

- ACVS (American College of Veterinary Surgeons): Congenital Vertebral Malformations and Kyphosis
- VCA Hospitals: Spinal Deformities in Dogs
- Charalambous et al., 2014, Vet Surg — Surgical outcomes of hemivertebra-related instability
- Jeffery & Barker, 2015, J Small Anim Pract — Vertebral malformation and stabilization review



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- Duhamel et al., 2013, Vet Rec — Pedicle screw–rod fixation in French Bulldogs
- Fossum, T. (2020). Small Animal Surgery, 5th ed. — Chapters on spinal deformities and stabilization
- Done et al., 2019, Vet Comp Orthop Traumatol — 3D-guided spinal fixation outcomes

Bottom Line

Unstable kyphosis is a congenital or developmental spinal deformity that can cause pain and paralysis if untreated.

Surgery (stabilization and decompression) offers the best chance of recovery, especially if done before severe nerve damage.

Most dogs improve dramatically — 80–90% regain normal or near-normal mobility.

Early diagnosis, specialist surgical care, and structured rehab are the keys to long-term success.

