CQ HAND + UPPER LIMB
SPECIALIST ORTHOPAEDIC SURGEON

PATIENT INFORMATION — IN DEPTH

Sagittal Band Rupture (Boxer's Knuckle)

Sagittal band rupture ('boxer's knuckle'): the band that centres the extensor tendon over the knuckle tears, letting the tendon slip to one side.

What you're feeling

The knuckle at the base of one of your fingers (most often the middle finger) feels sore, a little swollen, and something isn't moving the way it should. The classic sign is a feeling that the tendon on the back of the knuckle snaps or jumps sideways when you bend and straighten the finger. You may notice the finger drifts slightly toward the little-finger side, and that it is hard to get the finger to straighten on its own from a bent position, though once someone gently straightens it for you, it can hold there.

Many people first feel this after throwing a punch (against a bag, a wall, or in a fight), which is why the injury is nicknamed "boxer's knuckle." But it can also happen with a much smaller movement, like forcefully flicking a finger straight, or it can creep up gradually in people with inflammatory arthritis. There may be a painful clicking or catching every time you use the hand.

What's actually happening

On the back of each knuckle, the straightening (extensor) tendon runs down the centre of the finger like a cable in a groove. Thin slings of tissue called the **sagittal bands** sit on either side and hold that tendon centred over the top of the knuckle. The sling on the thumb side is the important one.

When that sling tears or stretches (from a punch, a sudden forceful movement, or long-standing joint inflammation) the tendon is no longer held in place and slips off the top of the knuckle into the valley between the bones, toward the little-finger side. Because the tendon is now sitting to the side rather than on top, it can't pull the finger straight efficiently from a fully bent position, and it snaps back and forth as the finger moves. That slipping, snapping, and weakness of straightening is the whole problem in a nutshell.

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What we can do about it

In our clinic, Dr Kieran Hirpara manages this condition by first confirming the diagnosis through a thorough assessment and imaging if needed. We typically begin with non-surgical care for long-standing issues and consider surgery only if that approach does not provide enough relief.

The good news is that **if it's caught early, this often heals without surgery.** The key is to stop the tendon slipping while the sling repairs itself.

Splinting (non-surgical). The most common treatment is a small, custom splint that holds the injured knuckle from bending too far while leaving the other fingers, and the finger joints further out, free to move normally. One neat version, sometimes called a **relative-motion or "yoke" splint**, simply holds the injured finger a touch higher than its neighbours, which keeps the tendon centred while you keep using the hand. The splint is usually worn for around six to eight weeks. Started within the first few weeks of the injury, this works well for most people.

Surgery. If the injury is old by the time it's seen, if the splint doesn't settle it, or if the tendon is fully dislocating, surgery can put things right. The surgeon either repairs the torn sling directly or rebuilds it using a nearby strip of tendon to re-create the sling and re-centre the tendon over the knuckle. After surgery the finger is protected in a splint for a period while it heals.

What to expect

For early injuries treated in a splint, the outlook is good: the snapping settles, the finger straightens normally again, and most people return to full use of the hand. It does ask for patience: the splint is worn for several weeks, and pushing the hand too hard too soon can let the tendon slip again before the sling has healed.

For injuries that need surgery (usually the older or more severe ones), repair or reconstruction is generally reliable at stopping the dislocation and restoring smooth movement, followed by a period of splinting and hand therapy to rebuild motion and strength. Boxers, martial artists and other athletes can usually return to their sport, but the hand needs time to heal properly first to avoid the problem coming straight back.

When to see someone

- A knuckle that snaps, clicks or catches when you bend and straighten the finger, especially after a punch or forceful movement: get it looked at early, because early splinting is what makes the difference.
- Difficulty straightening a finger on its own from a bent position, or the finger drifting toward the little-finger side.
- Ongoing pain and swelling over a knuckle that isn't settling, or a feeling that the tendon is "out of place."
- A knuckle injury in a boxer or martial artist: these injuries are easy to play through and easy to miss, and they do better when treated sooner rather than later.

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In more depth

This section goes further than you need for your own treatment decisions. Sagittal band injury is worth the extra reading because it is the extensor problem most often missed — the tendon has not torn, it has simply moved — and because getting the splint on early is what determines whether an operation is needed at all.

NOTHING IS TORN THROUGH; SOMETHING HAS SLIPPED

The extensor tendon runs down the back of the finger over the knuckle, held centrally by a thin hood of tissue on either side — the sagittal bands. When the radial band gives way, the tendon slides into the valley between the knuckles.

The consequences follow directly from that mechanics. The finger can be held straight once someone else straightens it, because a tendon lying in the valley can still hold an extended position — but it cannot be actively straightened from a bent start, because the displaced tendon has lost its line of pull. That distinction, between passive and active extension, is what separates this injury from a tendon rupture, and it is why a hand held open on the desk can look entirely normal.

The classic causes are a flicking or forced-flexion injury to a straight finger, a direct blow over the knuckle — the boxer's presentation — and, without any injury at all, rheumatoid arthritis, where the hood attenuates over time and the tendons drift towards the little finger.

SPLINTING WORKS IF IT IS STARTED EARLY

The treatment evidence is qualitative rather than numerical, and it points clearly. Acute sagittal band injuries **can be successfully treated by splinting the injured digit in neutral or hyperextension**, while **patients with chronic injuries, or those failing non-operative management, may benefit from surgical exploration** [1].

The splinting position is the specific part. A relative-motion or yoke splint holds the injured finger slightly more extended than its neighbours, which relieves tension on the healing band while allowing the hand to be used — an unusually tolerable form of immobilisation, and one reason compliance is generally good.

What makes the timing critical is that this is a soft-tissue injury that heals by scar. Splinted early, the band can heal at a length that holds the tendon centrally. Left for months, it heals elongated, the tendon continues to subluxate, and reconstruction rather than healing becomes the remaining option.

WHY CLASSIFICATION IS BEING REVISED RATHER THAN SETTLED

Contemporary work has focused on refining how these injuries are graded, with a **modification to the most prevalent classification system** proposed to guide treatment and standardise description [2]. That reflects the state of the field: the treatments are reasonably agreed, but which injury belongs in which category — and therefore who needs surgery — is still being worked out.

Practically, this means the strength of a recommendation here rests more on the examination findings than on a grade. Whether the tendon actively subluxates when the finger is bent, and how long it has been doing so, carries the decision.

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IT SITS WITHIN A FAMILY OF INJURIES THAT ARE READILY CONFUSED

Sagittal band injury is one of three closed extensor mechanism injuries defined by where the failure occurs — mallet at the fingertip, boutonnière at the middle joint, and sagittal band at the knuckle [3]. Each requires a different splinting position, and a swollen finger early after injury can present ambiguously. Because the treatment window for the sagittal band closes as the tissue heals long, distinguishing them promptly is worth more here than in the other two.

REFERENCES

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