

Which tooth first?

A framework for assessing structurally compromised teeth

Which teeth to treat, in what order, and what treatment is recommended for each.

This applies to structurally compromised teeth only, meaning teeth with existing large amalgam restorations, or old, poorly bonded composite restorations.

Smaller occlusal and class II restorations do not enter this assessment.

A direct composite is recommended if there are signs of failure, or pathology.

First, before any ranking: pain, caries or infection

These teeth are treated first.

Caries visible on a radiograph is almost always deeper than it appears clinically.

Reversible pulpitis, whether from deep caries or a crack, generally has a good outcome although treatment is more complex.

Irreversible pulpitis needs root canal treatment if the tooth is restorable, or extraction if it is not.

01. Count the four red flags

Two red flags are usually present as a baseline in this group; for example, a large existing restoration typically means a wide isthmus and thin cusps. The other two factors separate one tooth from the next.

Isthmus width greater than 2mm

Flexure

The wider it gets, the more the tooth flexes.
Usually already present.

Remaining cusp thickness less than 3mm

Flexure

Or 2mm for a holding cusp, or one out of occlusion.
Usually already present. Cusps cope far better with vertical load than lateral load, so a guidance cusp needs more structure behind it.

Box vertical depth greater than 4mm

Flexure and complexity

Less structure remaining, so the cusps flex more.
Also means deep margin elevation is typically required.

Peripheral rim fracture present

Damage sustained

Damage already sustained rather than predicted, including an old MOD restoration.

Other signs may also be present, for example occlusal abfraction or fractured existing restorations. It is either there or it is not.

02. Assess the occlusal load

Occlusal load is the single most important factor, above the flag count. A tooth with no restoration at all can fracture vertically where the load is high enough. It is rare, but it happens.

Heavy Parafunction, wear facets, premature contact, a lone-standing molar, or premolars where molars are absent.

Typical Normal function, intact opposing arch.

Light Unopposed, opposed by a denture, or if teeth are mobile. Lowers urgency. Cracks are unlikely to progress quickly without loading. It does not remove the need to restore.

03. Treatment priority

Its job is to rank the order of urgency: which teeth are treated first, and which can wait.

High risk 2/4, 3/4 and 4/4 red flags with heavy occlusal load.
Also 4/4 red flags with a typical occlusal load.

Moderate risk 2/4 and 3/4 red flags with a typical occlusal load.
Also 4/4 red flags with a light occlusal load.

Lower risk 2/4 and 3/4 red flags with a light occlusal load.

Assess once, record the outcome in the patient's notes and inform the patient what you have found. Anything monitored is monitored against photographs or a previous scan.

04. Plan the restoration before you start

Where a direct restoration is not a reasonable solution in a moderate or high risk tooth, recommend an indirect. Revert to a direct if the damage proves less extensive than predicted.

Two reasons to go indirect. Either is enough on its own

01. Protection: some or all of the remaining cusps need covering against load.

02. Reconstruction: contacts, proximal walls and emergence have to be rebuilt.

Unopposed removes the protection argument only

Where there is little tooth structure remaining and a direct restoration is not a reasonable solution, it is still indirect. Restore it either way, due to the high risk of secondary caries.

Semi-direct where the patient can attend once

Suits occlusal-buccal and occlusal-lingual.
Not ideal where a proximal wall needs to be restored.

05. Can I restore this predictably?

Pain indicates a more complex restoration due to the pulp being compromised. A deep box typically means more demanding isolation and a need for deep margin elevation. Four red flags with a heavy occlusion makes vertical fracture more likely, and is one of the few situations worth referring.

Patient factors are important. Can they open wide enough, lie supine, and tolerate rubber dam? Rubber dam is not negotiable, so limited opening, an inability to lie flat, or considerable anxiety will influence what is achievable.

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This chart draws on the evidence and clinical experience behind biomimetic restorative care.

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