

# MyelomaMatters



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# The spine: a core issue

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Myeloma bone disease is the most common and often most debilitating feature of myeloma.

Bone pain is therefore a very common symptom. Between 70 – 80% of patients have evidence of myeloma bone disease at the time of diagnosis and most patients will experience bone disease at some point.

Myeloma bone disease is due to myeloma cells in the bone marrow interacting with the surrounding bone causing the bone to be broken down faster than it can be repaired.

The extent of myeloma bone disease varies considerably in individual patients. It most often occurs in the middle or lower spine, the hips and the rib cage.

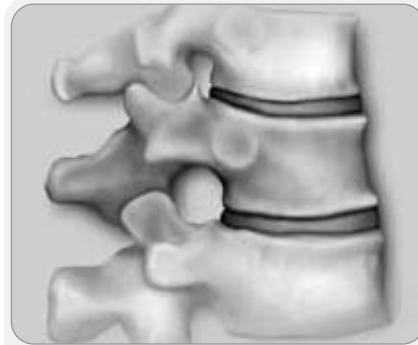
The spine can be involved in at least two distinct ways:

1. Vertebral collapse due to deposits of myeloma cells or bone loss
2. Solitary plasmacytoma of bone – a build-up of myeloma cells in or around the bones of the spine

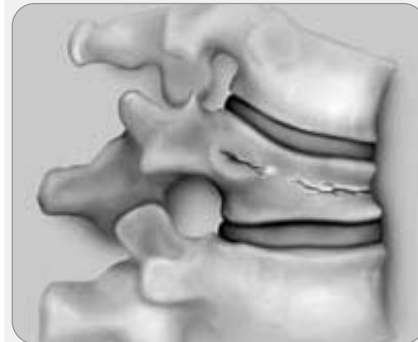
## Presentation

Depending on the extent of spinal involvement, patients can experience height loss and varying degrees of immobility and neurological (nerve) problems. Vertebral collapse can lead to spinal deformity, sometimes resulting in very debilitating fractures of the sternum.

Occasionally spinal cord compression occurs, which can cause numbness, tingling and altered sensation in the lower limbs. This can progress to paralysis and therefore is treated as a medical emergency.



Normal spine showing three vertebrae, separated by vertebral discs. This spine is aligned correctly.



The central vertebra has a compression fracture, causing misalignment of the spine. This will cause severe back pain.

## Investigations

X-rays will demonstrate bone lesions, bone loss and fractures. Magnetic resonance imaging (MRI) is highly accurate in diagnosing and assessing the size of any plasmacytoma or area of bone damage, and in showing any spinal cord compression. CT and PET-CT scans can also be useful diagnostic tools prior to any planned radiotherapy and CT-guided interventions.

In all instances of myeloma bone disease in the spine speed of diagnosis and treatments is an

absolute priority in order to reduce both long-term problems and impaired quality of life.

## Management

Myeloma bone disease in the spine is managed in two ways:

1. Treatment of the local problem within the spine e.g. vertebral collapse
2. Treatment of the underlying myeloma, which in turn prevents further myeloma bone disease occurring

This usually requires a combination of interventions, which may include:

- Radiotherapy
- Surgery
- Vertebroplasty or balloon kyphoplasty
- Chemotherapy
- Supportive treatments
- Pain control

## Radiotherapy

Radiotherapy is the use of high-energy radiation (usually X-rays) to kill cancer cells while doing as little harm to the healthy cells as possible. It works by targeting rapidly dividing cancer cells and damaging them so they cannot survive or grow.

Radiotherapy is very useful in treating myeloma in the spine where the myeloma is causing pain or pressure on the spinal cord. It can also be used to treat a plasmacytoma.

Radiotherapy may be used alone or in conjunction with surgery.

Radiotherapy treatment has to be carefully planned and requires specialist staff and equipment.

This means it is sometimes necessary to travel to another hospital for treatment. Treatment is given using a large machine positioned exactly over the area of the body to be treated. Receiving radiotherapy is very similar to having an X-ray. The radiation beam is invisible, and the machine may move and make a noise. Radiotherapy treatment itself is painless and lasts only for a few seconds or minutes.

Side-effects of radiotherapy vary from person-to-person, but are almost always temporary and disappear soon after treatment is finished. Side-effects may include tiredness and fatigue, nausea and sensitivity of the skin at the treatment site (described as being similar to sunburn).

Radiotherapy usually offers immediate pain relief but continues to work for up to six weeks following treatment; so the full benefits, including pain relief, may not be felt immediately.

**Surgery**

Surgery may be required to remove a plasmacytoma or to stabilise the spine and reduce pressure on the spinal cord. Intensive physiotherapy may be used after surgery to enable patients to regain mobility.

**Vertebroplasty or balloon kyphoplasty**

Vertebroplasty and balloon kyphoplasty are two similar types of procedure used to help relieve pain caused by collapsed vertebrae.

Vertebroplasty involves injecting orthopaedic cement into the collapsed vertebrae to stabilise and strengthen it. This can relieve pain and help prevent further collapse.

Balloon kyphoplasty is a similar procedure that involves inserting a

Balloon kyphoplasty is a relatively minor surgical procedure whereby a small balloon is inserted into the vertebra to create a space before cement is injected to stabilise the fracture.

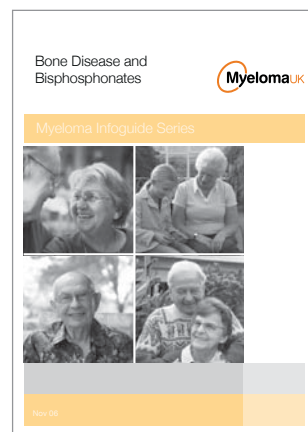


balloon into the collapsed vertebra and inflating it to restore its shape, stability and strength. In some cases, it is also able to restore some of the height loss that was caused when the vertebra collapsed.

Both of these procedures take place in either the radiology department or spinal surgery theatres at the hospital, and are carried out by an interventional radiologist or an orthopaedic surgeon. The procedures are usually performed under local anaesthetic or light sedation, although general anaesthetic may be used. The procedures last about an hour for each vertebra treated (more than one can be done at a time), and may be done as a day case or with just one overnight stay in hospital.

Vertebroplasty and balloon kyphoplasty are not usually used interchangeably; one or other will be used based on the location or nature of the collapsed vertebra

**Further information**



**Bone Disease and Bisphosphonates Infoguide**

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in the spine. Both vertebroplasty and balloon kyphoplasty may bring immediate and long-term symptom relief.

**Chemotherapy and steroids**

Myeloma bone disease in the spine can also be reduced by treating the underlying myeloma, for example by chemotherapy.

Chemotherapy works by targeting rapidly dividing cancer cells and preventing them from being able to multiply and grow. Unfortunately, chemotherapy may also affect healthy fast-dividing cells such as those in the bone marrow, hair follicles and the lining of the mouth and gut, causing side-effects.

Side-effects of chemotherapy include nausea and vomiting, sore mouth, tiredness and fatigue, hair loss and increased risk of infection.

Patients may feel cumulatively more tired during treatment, but this usually gradually resolves once treatment is completed.

Steroids such as dexamethasone

and prednisolone may be used in combination with chemotherapy both to treat the underlying myeloma and also to reduce inflammation and pain.

**Supportive treatment**

The management of myeloma bone disease has been revolutionised in recent years by a group of drugs called bisphosphonates. These are drugs that can help protect bones from the damaging action of myeloma cells and have several benefits in treating myeloma bone disease in the spine including:

- Preventing or slowing down further damage to the vertebra
- Reducing bone pain
- Reducing the need for radiotherapy
- Reducing the likelihood of further vertebral collapse
- Improving the chances of healing and recovery of strength of bone

The bisphosphonate may be given as a daily tablet at home or a monthly intravenous infusion in the outpatient department.

Side-effects of bisphosphonates are generally mild and include fever and flu-like symptoms, generalised bone aches and pains, nausea and impaired kidney function.

**Pain control**

Myeloma bone disease in the spine may cause bone pain due to the thinning and weakening of the vertebra and due to vertebral collapse. All of the treatment approaches outlined above may help reduce or control this pain.

Painkillers or 'analgesics' will also be prescribed to help control pain. Pain is very individual and different drugs work best for different people so it is important that an individual approach is used.

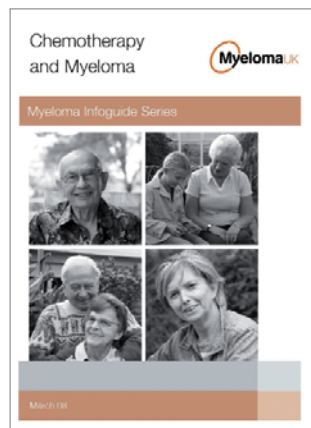
As with any medication, all painkillers can have side-effects. These can include constipation, nausea, loss of appetite and drowsiness. These side-effects can usually be managed effectively. In the case of painkillers that are known to cause constipation, it is important to start drugs to prevent constipation early, (i.e. laxatives) as constipation is much easier to prevent than to treat.

**Conclusion**

The appropriate assessment and management of myeloma bone disease in the spine is extremely important, particularly in newly diagnosed patients. This involves two treatment approaches: managing the local problem within the spine and treating the underlying myeloma.

The aim of treatment is to maintain spinal function and mobility, and to provide effective symptom and pain relief, while treating the myeloma and helping to optimise the long-term quality of life for patients.

**Further information**



**Chemotherapy and Myeloma Infoguide**

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