



ST ILLUSTRATION: ADAM LEE

DocTalk

Radiosurgery offers hope for treatment of spinal tumour



Daniel Tan

The spinal cord is a very delicate network of nerves that, together with the brain, form the central nervous system, which influences activities in all parts of the body.

When it is injured, there is a high risk of paralysis. The spinal cord can also be damaged internally by

ried out effectively and safely.

The application of radiosurgery to other parts of the body (outside the brain) is widely known by the acronym SBRT, which stands for stereotactic body radiation therapy. Since 2008, its use to treat tumours has approximately doubled each year.

Based on outcomes from numerous institutions, some 80 per cent to 90 per cent of patients have had their secondary spine tumours brought under control one to two years following radiosurgery.

I still remember Madam F, who saw me in 2013. She had just undergone two major operations, to re-

checked, it would eventually squash her spinal cord, rendering her paralysed from the neck down.

My team immediately arranged for radiosurgery for the tumour encasing her spinal cord.

Unlike in open surgery, no incisions were involved, and Madam F experienced no pain. It was an outpatient procedure, which thankfully was successful.

Within two weeks, the tightness and pain in her neck went away. After three months, the fluid space around her spinal cord returned as the tumour shrank.

After six months, the tumour disappeared, and the area around her

growths and diseases.

Cancer, especially when it has spread from other areas of the body to the spine, is one such growth that can have devastating consequences for the spinal cord.

The spine is the third-most-common location for cancer cells to spread to, and it is the most difficult to operate on because of its proximity to the nerves.

Estimates say that 5 per cent to 30 per cent of all patients with systemic cancer will see cancer spread to the spine. Of this group, 10 per cent will experience symptomatic disease that requires medical intervention.

Fortunately, there is a breakthrough technology – targeted radiation, or radiosurgery – that can help those with such tumours.

The use of this highly accurate radiation therapy, which destroys tumours with 10 times the usual radiation dose, is on the rise.

Twenty years ago in Singapore, this was possible only in the brain using a gamma-knife machine, which required a fixed frame to be screwed onto the patient's skull.

About 10 years ago, frameless systems were introduced, and this development eventually allowed radiosurgery to progress to other areas of the body.

It is done through the use of advanced radiation delivery platforms – integrating high-resolution image processing, advanced computer planning, onboard three-dimensional X-ray image guidance and highly shaped radiation beams. As a result, such high-risk treatments can be car-

move a large tumour from the back of her neck and a brain tumour that caused her to experience severe dizziness and vomiting.

Unfortunately, this was not the end of her woes. Two months later, she developed severe neck tightness and pain, and started to feel weak in her arms and legs.

A magnetic resonance imaging scan showed that the aggressive tumour was filling the space created by the surgery, and was starting to strangle her spinal cord.

Another operation was not an option as the tumour was growing around the rods and screws that had been inserted previously to stabilise her spine.

Unfortunately, standard radiotherapy was unlikely to control the bulky tumour. She had undergone that treatment before, but the tumour was resistant to it.

If the tumour was left un-

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spinal cord re-expanded.

By then, her strength had returned fully, and she was back to her normal routine.

Although she cannot be cured of her cancer because it has spread to other organ sites, she can now enjoy a good quality of life.

The other sites to which her cancer spread were non-life-threatening and could be controlled with oral chemotherapy.

Targeted radiation worked for her because of its ability to accurately deliver extremely high doses of radiation. This killed the cancer cells, leaving the body's own mechanism to remove the dead cells and repair the site previously occupied by the tumour – all without damaging the spinal cord.

Another patient was Madam Y, whose legs were weakened by a tumour strangling her spinal cord.

She, too, regained her strength after spine radiosurgery, to a point where she could walk up an overhead bridge.

She died early this year because the disease had progressed throughout her body. However, the treatment gave her physical mobility during the final year of her life, which she was grateful for.

These patients are a testament to how technological advances have turned around an otherwise-hopeless situation.

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