A NEW RAY OF HOPE

Asia Pacific’s most advanced CyberKnife® Robotic Radiosurgery system is now at Apollo Speciality Cancer Hospital
The CyberKnife® Robotic Radiosurgery System is the world’s first and only robotic radiosurgery system designed to treat tumours anywhere in the body with sub-millimeter accuracy. The CyberKnife® System’s versatile capability to precisely treat static or moving lesions anywhere in the body allows physicians to successfully treat patients with a wide variety of medical conditions.

This revolutionary technology marks yet another landmark innovation by Apollo Hospitals. The newly installed CyberKnife® System at the Apollo Speciality Cancer Hospital is the most advanced in the Asia Pacific region.
What is CyberKnife® Radiosurgery?
CyberKnife® radiosurgery is a precise, painless, non-invasive radiation treatment that can be an alternative to open surgery in certain cases. It is the world’s first and only whole body dedicated radiosurgery system.

The CyberKnife®, a huge leap forward in the treatment of tumours
In the past, certain pathologies - especially in the Central Nervous System (CNS) - were considered largely inoperable, and at best, the chances of treatment in these cases were very slim. In such cases surgery too was risky, and irradiation not possible due to the close vicinity of highly radio-vulnerable structures. CyberKnife® irradiation revolutionizes the treatment of these kind of tumours. The precision with which therapeutic X-ray can be concentrated to the right target has never been seen before.

Cancer treatment is usually a long-drawn out and painful procedure. Today, the CyberKnife® at Apollo Speciality Cancer Hospital makes cancer treatment more precise, faster, safer, and far more comfortable for you.
This is because, the CyberKnife® is a non-invasive alternative to surgery. The source of the therapeutic X-ray (the Linear Accelerator) is mounted on a computer controlled robotic arm. It can aim a pencil like beam, exactly at the target, from any direction. This flexibility results in a ‘never seen before’ sub-millimeter precision with which the beams target, reach and destroy the lesion. It’s successful in the treatment of cancerous and non-cancerous tumours anywhere in the body, including the prostate, lung, brain, spine, liver, pancreas and kidney.

It is even more reassuring as the procedure involves no incisions, anesthesia or overnight hospitalization.

CyberKnife® treatment minimizes the damage to surrounding tissues. This means you’ll be back on your feet after treatment, and treatment usually lasts from one to five days.

**How does the CyberKnife® work?**

The CyberKnife® combines two advanced technologies:

1. The first innovation is a lightweight radiation delivery system mounted on a multi-jointed robotic arm. The robotic arm provides unparalleled access to tumours anywhere in the body. What this effectively means is that, the CyberKnife® can reach areas of the body that are inoperable with other radiosurgery systems, and allows a more flexible delivery of radiation for optimum treatment.

2. The second innovation is an image guidance system. This advancement allows the CyberKnife® System to locate and track the tumour throughout treatment, and correct for small patient movements. This allows radiation to be delivered without the use of a stereotactic frame.

**Who will be involved in the treatment?**

CyberKnife® treatment utilizes a team approach where medical experts collaborate with the patient as their central focus. Team members may include your surgeon, radiation oncologist, medical oncologist, physicist, radiation therapist and other team members within the hospital.
Patient Benefits

- Pain free
- Non-invasive
- No anesthesia required
- Outpatient procedure
- No Recovery time
- Immediate return to normal activity
- No invasive head or body frame
- No breath holding during treatment

Treatment Process

CyberKnife® treatments involve a team approach in which several experts participate. Before execution of the irradiation process, the patient has to undergo a substantial preparation process.

Step 1:
Patient consultation
Physician and patient meet to determine the CyberKnife® System treatment objectives.

Step 2:
Patient preparation
CyberKnife® is a completely frameless treatment system.

Fiducial Placement
Patient’s undergoing CyberKnife® treatment for a prostate or some other site body (non-head) lesion, may require a short outpatient procedure to implant several small metal markers (fiducials) near the tumour to enable the CyberKnife® System to track tumour position throughout treatment. Lesions in the head do not require this step.

Making a Mask or Body Mold
A custom soft mask (for head/neck treatments) or body mold is formed and used to help minimize movement during the treatment and ensure your comfort. The process is simple and painless.

All patients who will undergo the CyberKnife® treatment will go through the Apollo CyberKnife® Advisory Board.

All enquiries regarding the CyberKnife® treatment will be cleared by your team of experts.
**Step 3: Image acquisition**

Prior to the procedure, a CT scan is performed. The scan is used to identify the exact size, shape and location of the tumour along with the surrounding vital structures to be avoided. Additional scans like MRI, PET CT/angiography may also be done if necessary.

**Step 4: Planning**

The image is then digitally transferred to the CyberKnife® System’s workstation, where the treatment planning begins. Here, a qualified team uses the CyberKnife® software to generate a treatment plan. Planning of the treatment is one of the most critical and time-consuming process where all the specialists participate (Radiation Oncologist, Clinician, Physicist, and the radiologist will all participate). The machine itself is under regular quality control, under the care of specially trained physicists. An individual plan of dose delivery will be generated which will maximize the treatment efficacy and minimize the risks involved.

The treatment plan will undergo a dosimmetrical verification test.

**Step 5: Treatment**

Once the treatment plan is developed, the CyberKnife® procedure is set to begin. The CyberKnife® System’s computer-controlled robot will slowly move around the patient, to the various locations from which it will deliver radiation to the tumour.

Each treatment session will last between 30 and 90 minutes, depending on the type of tumour being treated.

If treatment is being delivered in stages the patient will need to return for additional treatments over several days. In majority of cases, patients can resume their previous activities after the completion of the CyberKnife® treatment. However the consultant will give the final advice regarding this.
Follow-up
People after the CyberKnife® treatment will have to undergo follow-up monitoring without fail. The team works out an appropriate set of follow-up tests to provide the patient with more realistic and objective answers.

Follow-up imaging, generally performed with a combination of CT, MRI and/or PET scanning, is usually performed in the months following treatment to assess the tumour’s response to the delivered radiation.

Is the CyberKnife® clinically proven?
The CyberKnife® System is based on radiation technology that has been proven for over 30 years. Thousands of patients have received CyberKnife® treatments worldwide, and many clinical studies with the CyberKnife® have been published in medical journals.

What types of tumours can CyberKnife® treated?
The CyberKnife® System is cleared by the FDA to treat tumours and lesions anywhere in the body, when radiation treatment is indicated. Consult with your physician to see if the CyberKnife® treatment is right for you.

Apollo Speciality Cancer Hospital has comprehensive, multidisciplinary, state-of-the-art facilities. They bring in the latest technology, with the most competent and highly skilled healthcare professionals. Apollo Speciality Cancer Hospital has the unique advantage of not being a stand-alone cancer unit, but also having the most modern backup, in terms of super specialties and diagnostics. At Apollo Speciality Cancer Hospital, a co-ordinated multidisciplinary approach has been adopted in the treatment of patients.

Apollo provides treatment through the Tumour Board. This consists of a panel of competent medical, surgical and radiation oncologists, together with diagnostic consultants, who discuss referred cases and jointly decide on the best line of treatment. Medical counselors, speech therapists, dieticians and other professionals, appropriate to the individual case, provide further support to the panel.
Apollo Speciality Cancer Hospital is set apart by the comprehensive cancer care it delivers. Here, the nation’s the best healthcare professionals work with a coordinated multi-disciplinary approach, supported by the latest technology.

Apollo imparts cancer treatment through a Tumour board which comprises a panel of competent Medical, Surgical and Radiation Oncologists together with diagnostic consultants who discuss referred cases and jointly decide on the best line of treatment for the patient.

Apollo also supports patients, helping them improve their quality of life post-treatment with the help of medical counselors, speech therapists, dieticians and other professionals, appropriate to the individual case.

Apollo Speciality Cancer Hospital is equipped with facilities on par with the best in the world. The most modern technology and equipment, in addition to highly skilled healthcare professionals deliver comprehensive care for the entire range of diseases. Apollo Speciality Cancer Hospital has the cutting-edge equipments for advanced procedures bringing world-class healthcare closer to you.
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