Kalyani's Knee & Shoulder Clinic

कल्याणी घुटना एवम कंधा क्लिनिक

High Tibial Osteotomy (HTO)

Knee Preservation Surgery

Appointments: 9554066663, 9554066664, 9219200378

Address: Umaraha Market, Varanasi

What is High Tibial Osteotomy? High tibial osteotomy is a knee realignment operation. In selected patients with bow-leg alignment and inner-side knee arthritis, it shifts body weight away from the damaged medial compartment towards the healthier part of the knee. The aim is to reduce pain, improve function, preserve the natural knee joint and delay or avoid total knee replacement.

Knee preservation focus: HTO is not a joint replacement. It keeps the patient's own knee joint and is especially useful for active, younger or middle-aged patients with one-sided compartment overload and correctable alignment.

Who may benefit?

- Medial compartment knee osteoarthritis with bow-leg/varus alignment.
- Pain mainly on the inner side of the knee rather than the whole knee.
- Active patient wishing to preserve the natural knee and delay replacement.
- Reasonably preserved movement and cartilage in the outer compartment.
- May be combined with meniscus, cartilage or ligament procedures when needed.

Common symptoms

- Inner-side knee pain during walking, standing, stairs or squatting.
- Pain that increases with longer activity and improves with rest.
- Bow-leg appearance or feeling that weight falls through the inner knee.
- Swelling after activity, stiffness and reduced confidence in the knee.
- Difficulty with sports, prolonged walking, cross-legged sitting or daily work.

Examination and diagnosis

History: site of pain, walking distance, activity needs, previous injury, injections, physiotherapy and expectations.

Alignment assessment: bow-leg/varus alignment, gait pattern, thrust while walking and limb length are checked.

Knee examination: range of motion, swelling, tenderness, meniscus signs, ligament stability and patellofemoral

Technical details

Planning: the correction is calculated using standing alignment films to shift the weight-bearing line away from the overloaded medial compartment.

Operation principle: the upper tibia is cut in a controlled manner and opened/closed to correct alignment.

Common technique: medial opening-wedge HTO is commonly used for varus medial compartment overload.

Fixation: a strong plate and screws hold the corrected position while the bone heals.

Additional procedures: arthroscopy, meniscus, cartilage or ligament procedures may be added when clinically indicated.

Anaesthesia and stay: usually performed under regional/spinal or general anaesthesia with hospital stay depending on recovery and surgeon protocol.

Treatment options

Non-operative care: weight management, activity modification, physiotherapy, pain medicines, injections and an unloader brace may help early symptoms.

HTO surgery: considered when symptoms persist despite conservative treatment and the knee pattern is suitable for realignment.

Why not total knee replacement first? in selected active patients, HTO preserves the natural knee, maintains bone stock and can delay or avoid replacement.

When replacement may be better: advanced arthritis in multiple compartments, severe stiffness, inflammatory arthritis or low functional demand may favour knee replacement.

symptoms.

Imaging: standing knee X-rays and full-length alignment X-rays help plan correction. MRI may assess cartilage, meniscus and ligaments.

Patient selection: best results depend on correct indication, preserved outer compartment and realistic rehabilitation commitment.

Rehabilitation: crutches, protected weight-bearing, knee movement exercises, quadriceps strengthening and progressive return to activity are planned step by step.

When to seek early consultation

- Progressive bow-leg deformity or worsening inner knee pain.
- Pain limiting work, walking, stairs or desired activity.
- Repeated swelling, locking, giving way or suspected meniscus/ligament injury.
- Young or active patient told that knee replacement is the only option.

HTO vs Total Knee Replacement: key difference

Feature	High Tibial Osteotomy	Total Knee Replacement
Main aim	Realign and preserve the natural knee joint	Replace damaged joint surfaces
Best suited for	Selected active patients with one-compartment overload and varus alignment	Advanced arthritis, often multi-compartment disease
Activity goal	Pain reduction with preservation of higher activity potential	Reliable pain relief for end-stage arthritis
Future options	Can delay or avoid replacement in suitable patients	Revision may be needed later in some patients

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For knee preservation, bow-leg deformity, medial compartment arthritis, HTO assessment and rehabilitation guidance

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