

Limb-Salvage Surgery or Amputation: How Is the Decision Made?

Removing the cancer, understanding the likely function afterwards, and making room for what matters to you.

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Limb-salvage surgery removes a tumour while keeping the arm or leg. Amputation may be necessary when adequate tumour removal cannot be achieved that way.^[1]

This article concerns surgery for a primary bone cancer in an arm or leg. The decision includes what you may be able to do afterwards, what help you may need, and what remains uncertain.

What does limb-salvage surgery involve?

The surgeon removes the affected bone and a surrounding margin of tissue. A bone graft or an internal implant may replace what has been removed. An implant inside a preserved limb is different from the external prosthetic limb that may be used after amputation.^[1]

Rebuilding the bone is only part of reconstruction. Muscles, tendons and other soft tissues must provide movement, joint stability and coverage of the repair. The amount and condition of these tissues help determine how the preserved limb can function. Sometimes additional tissue coverage is needed.^[3]

Saving a limb does not necessarily restore normal function. Some activities may remain difficult or no longer be possible.^[7] That possibility belongs in the discussion before surgery, alongside the aim of removing the cancer.

For a leg operation, “Will I walk?” needs a little unpacking. Walking around the house with an aid, climbing stairs and managing a working day are different questions. After a distal femoral replacement, for example, rehabilitation guidance includes walking with a frame or crutches and learning to manage stairs. Return to work is assessed individually.^[6] These are useful goals to discuss before surgery, rather than promises attached to the words “limb salvage”.

Why might amputation be recommended?

The position and extent of the tumour matter. Involvement of important nerves or blood vessels can make limb preservation unsuitable. Occasionally, the operation reveals more extensive disease than the scans suggested, so the plan may have to change.^[2]

The surgeon aims to remove the cancer with a margin of healthy tissue around it. The removed tissue is examined in the laboratory to assess that margin. A proposal to preserve the limb must therefore include a clear explanation of how adequate tumour removal will be achieved.^[2]

Ask for the reasoning behind the recommendation. “What makes limb preservation feasible in my case?” and “What would make amputation preferable?” are reasonable questions. You do not have to choose from operation names alone.

In osteosarcoma, chemotherapy is often given before surgery and may shrink the tumour. It cannot guarantee limb preservation. The surgeon must still achieve adequate removal. Other bone cancers need their own treatment plan.^[1]

Does keeping the limb always mean a better daily life?

Research does not establish that limb salvage always gives a better quality of life than amputation. That does not mean the two options give the same result. These comparisons cannot predict how you personally will feel after either operation.^[4]

More about the evidence

A systematic review found that most studies comparing quality of life after limb salvage and amputation did not find a statistically significant difference. The studies used different questionnaires, assessed patients at different times and usually lacked measurements from before surgery.^[4]

The comparisons also did not adequately account for factors that could influence quality of life, such as other illnesses.^[4]

Be specific about your priorities: the stairs at home, your work, caring responsibilities, transport and the activities you most want to continue. These details give the phrase “good function” a practical meaning in your discussion with the surgeon and rehabilitation team.

Dr. Vishnu's perspective

Before we discuss what you might return to, I want to know what your day involves. A desk job, a day on your feet, heavy physical work. The explanation of the operation needs to make sense for the life you want to get back to, including its possible limitations.

Rehabilitation belongs in the discussion before surgery

The practical discussion has two parts: the help you may need early on, and the function expected later. Both deserve attention, including where that expectation remains uncertain.

Before a planned amputation, assessment can include general health, the other limb, emotional needs and the home or work environment. A physiotherapist and prosthetist can help explain rehabilitation and possible devices. Prosthetic fitting is an individual decision, not an automatic next step for everyone.^[5]

After limb-salvage surgery, the surgeon provides the rehabilitation team with instructions for that reconstruction. Your plan for movement and loading of the limb needs to follow those instructions. A timetable from someone who had a different operation may not apply.^[2]

Rehabilitation after amputation works towards personal goals, including transfers and everyday activities. Where a prosthetic limb is suitable, training is needed to use it. Emotional adjustment also deserves attention; support can be discussed alongside the practical preparation, rather than left until difficulties arise.^[5]

Talk about the possibility of later operations

A reconstruction can develop infection, implant loosening or breakage. A bone graft may fail to join to the remaining bone or may fracture. Further surgery can be needed for these problems or for tumour progression. These are different reasons for revision, and their relevance varies with the operation.^[3]

Severe infection around a limb-salvage implant may require further operations. If infection cannot be controlled, amputation may eventually be necessary. Discussing this possibility beforehand allows it to be considered as part of the longer-term plan.^[2]

Questions to take to the consultation

- What tissue needs to be removed, and what would be reconstructed?
- What function do you expect for the activities that matter to me?
- What would change the plan during or after surgery?
- Which complications and later procedures should I understand?
- Can I discuss rehabilitation and prosthetic options before deciding?
- What remains uncertain, and when will we know more?

A written account of the options and the reasons for the recommendation can help you return to the discussion. It should make room for both the cancer treatment plan and your own priorities.

Frequently Asked Questions

Does chemotherapy guarantee that the limb can be saved?

No. In osteosarcoma, chemotherapy may shrink the tumour before surgery, but the surgeon must still be able to remove it with an adequate margin. [\[1\]](#)

Is quality of life always better after limb-salvage surgery?

Research does not establish that. Studies use different measures and often lack information from before surgery. Their results cannot predict which operation will give an individual person a better daily life. [\[4\]](#)

Can limb-salvage surgery mean more operations later?

Yes. Infection, implant loosening or breakage, and problems with a bone graft can require further surgery. The relevant risks depend on the reconstruction. [\[3\]](#)

Will everyone be able to use a prosthetic limb after amputation?

No. Suitability depends on the amputation, strength, general health and the tasks the device needs to support. A rehabilitation assessment helps establish realistic options. [\[5\]](#)

Your consultation

Discuss limb salvage and amputation decisions

To discuss a proposed limb-salvage operation or amputation for bone sarcoma, you can book a consultation with Dr. Vishnu Baburaj at Aster MIMS Kannur. Your priorities for daily life and rehabilitation belong in that discussion.

The evidence behind this article

1. PDQ Pediatric Treatment Editorial Board. *Osteosarcoma Treatment (PDQ), Patient Version*. National Cancer Institute. Updated 25 February 2025. [Full patient summary](#).
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3. Shah A, Cardoso FN, Souza F, et al. *Failure Modes in Orthopedic Oncologic Reconstructive Surgery: A Review of Imaging Findings and Failure Rates*. *Current Oncology*. 2024;31(10):6245-6266. [Full review](#).
4. Fernando-Canavan L, Abraham P, Devlin N, Tran-Duy A. *Health-related quality of life in patients with extremity bone sarcoma after surgical treatment: a systematic review*. *Quality of Life Research*. 2024;33:1157-1174. [doi:10.1007/s11136-023-03554-3](#). [University repository manuscript](#).
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6. Royal National Orthopaedic Hospital. *A Patient's guide to the physiotherapy exercises and advice following distal femoral replacement/distal femoral diaphyseal replacement*. Ref 22-140. Updated 20 November 2025; accessed 24 October 2026. [Operation-specific patient guidance](#).
7. Macmillan Cancer Support. *Limb-sparing surgery*. Reviewed 1 August 2022; accessed 24 October 2026. [Replacement joints and bone grafts](#). Used for the possibility of functional limitations, not a recovery timetable.

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