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# Autograft: The Patient's Own Bone

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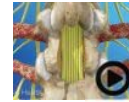
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By [Peter F. Ullrich, Jr., MD, Orthopedic Surgeon \(retired\)](#)Updated: 11/25/2009 | [Peer Reviewed](#)

Autograft (sometimes referred to as autologous bone or autogenous bone graft) is taken from the patient and transferred to the portion of the spine to be fused.

During the spinal fusion surgery, a separate surgical procedure is conducted to remove bone from another part of the patient's body and place it in the area of the spine to be fused. This is a surgical process called "harvesting" the bone graft. This procedure is usually done through a same incision in posterior fusions and through a separate incision on anterior fusions.

Bone is usually harvested from one of the patient's bones in the pelvis (the iliac crest). In some circumstances, it may be taken from a rib or another part of the spine. Because of the morbidity of the bone graft harvest procedure, and because there are a growing number of reasonable alternatives to autograft, less and less spine procedures include autograft harvesting.



[Spine Fusion Surgery Video](#)

## Autograft Advantages, Disadvantages and Considerations

Autograft is considered the gold standard for achieving a solid spine fusion because it has all of the characteristics necessary for a solid bridge of bone to grow:

- It provides the spinal fusion with a calcium scaffolding for the new bone to grow on (conduction)
- It contains bone-growing cells ([osteophytes](#)) and bone-growing proteins (bone morphogenic proteins) to foster new bone growth in the patient.

Article continues below

There are two main advantages of autograft:

- Greater chance of fusion success vs. allograft (cadaver bone) and some types of bone graft substitutes
- No risk of disease transmission (vs. using cadaver bone).

The main disadvantages of using autograft include the risks and possible complications associated with conducting any surgical procedure, e.g.:

- Surgical wound problems, such as infection
- Nerve injury (rare)
- Bleeding (rare).

Autograft procedures also carry the risk of chronic pain at the site where the bone was harvested. For posterior incisions, the incidence of ongoing pain is very technique dependent. Although it has been found to be as high as 25% in some studies<sup>1,2</sup>, the actual incidence in practice is usually lower. Ongoing [bone graft site pain](#) is higher for a separate incision (as opposed to using the same incision) and worse for grafts that require three cortical surfaces (e.g. a structural bone graft for an interbody fusion).

There is also a limited supply of this type of bone graft and sometimes it needs to be supplemented with some form of bone graft substitute.

## Avoiding Autograft Risks

The most commonly occurring risk is ongoing pain at the bone graft site. With advanced surgical techniques, this risk can be decreased. Most commonly, chronic pain associated with bone graft harvesting is either from injury to the muscle or from cutting the small sensory nerves (cluneals) that are near the pelvis (iliac crest) where the bone graft is harvested.

With careful surgical technique, both of these pitfalls may be avoided. For example:

- In a [PLIF](#) and [posterolateral gutter spine fusion](#), the bone harvest procedure can be done through the same incision as the spinal fusion surgery. This avoids going near any nerves or blood vessels, and only muscles at the top portion of the iliac crest need to be stripped. Use of this surgical technique minimizes the blood loss and post-operative pain associated with bone graft harvesting.
- Bone harvested for [ALIF](#) does need to be done through a separate incision (one inch to two inches long) over the pelvis. With careful surgical technique, however, only the very top portion of the iliac crest needs to be removed to harvest the bone graft. Care is needed to avoid the lateral femoral cutaneous nerve in this area, as damage to this nerve can result in chronic pain and numbness in the front of the thigh.

## References

1 Anderson DG, et al. Donor Site Morbidity After Anterior Iliac Crest Bone Harvest for Single-Level Anterior Cervical Discectomy

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