

Bone morphogenic proteins, or BMPs

3 **BMPs** are chemicals produced by your body to stimulate bone growth. BMPs are only approved by the FDA for use in certain procedures. Studies have shown that BMPs are as effective as an autograft in growing bone while avoiding the pain of taking bone from your body. Potential risks can include excessive bone growth, breathing difficulties and swelling.

HEALOS® with bone marrow aspirate, or BMA

4 **BMA** contains bone-forming cells and natural proteins. It is taken from your hip in a minimally invasive procedure using a special needle. After the BMA is removed, it is added to the HEALOS structure before it is implanted. Your own bone-forming cells are then used to fuse your spine. Using your own BMA for the bone graft avoids the risk of disease from an allograft and adverse events from BMPs.

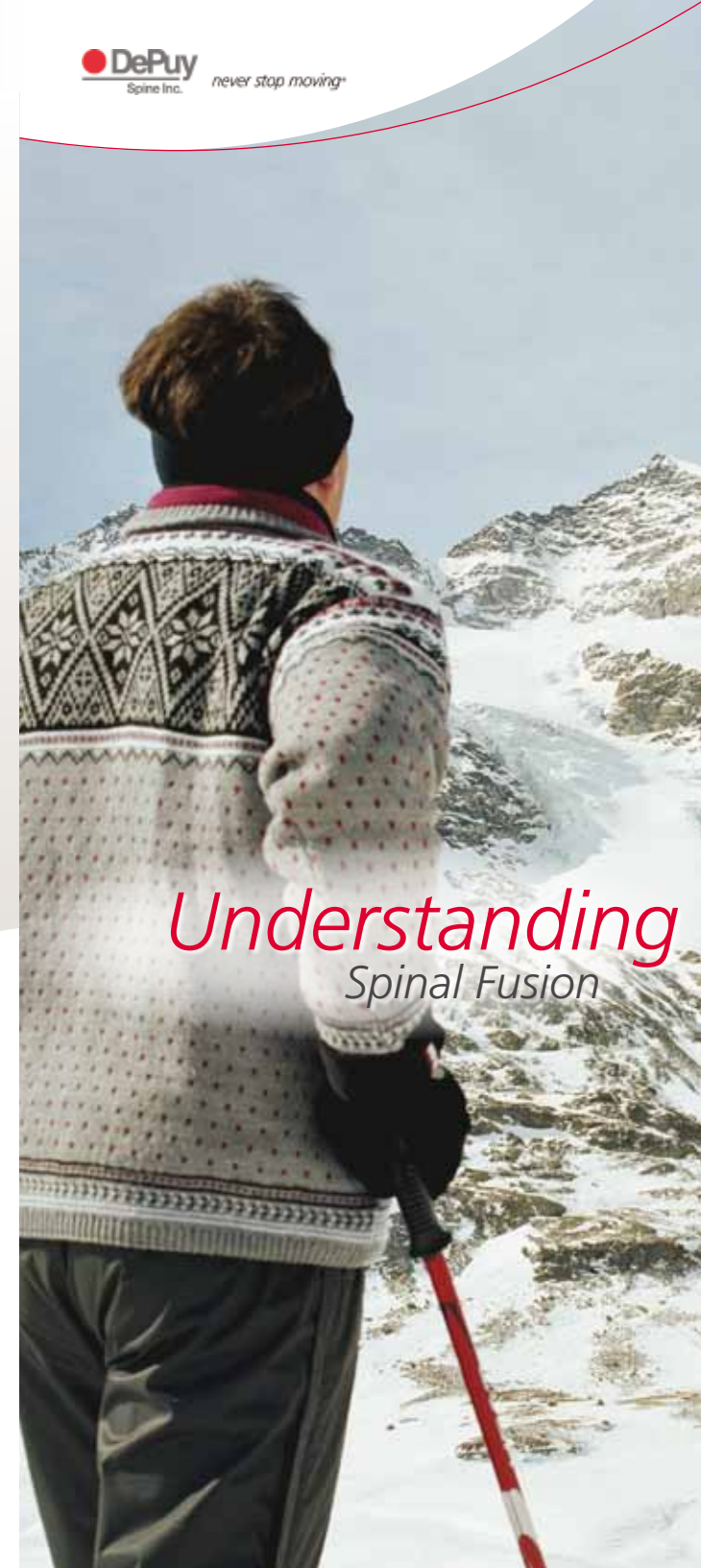
Risks of any bone grafting procedure include fracture, movement, resorption or rejection of the graft or failure of bone to grow and fill the gap.

For more information go to:

www.AllAboutBackandNeckPain.com

As your doctor, I look forward to answering any questions you have about your back and neck.

 **DePuy**
Spine Inc. *never stop moving®*



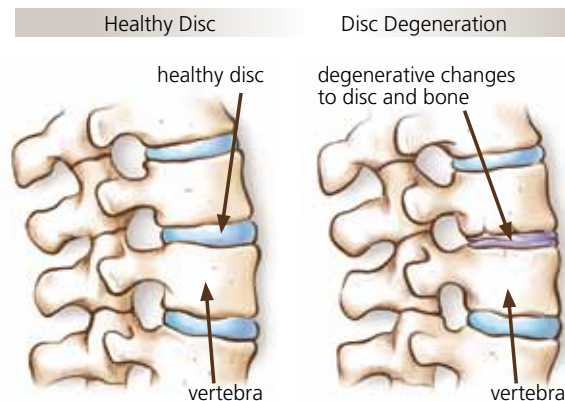
*Understanding
Spinal Fusion*

Q What do I need to know?

A Spinal fusion successfully stabilizes the spine and reduces pain. Over the past ten years, new devices and minimally invasive surgical techniques have improved the results. Your surgeon is most qualified to advise you, answer your concerns, and set reasonable expectations about your spine care. The decision to have surgery requires careful thought. Read this brochure to answer your basic questions. Write down any questions you may have and decide with your surgeon if spinal fusion surgery is the right option for you.

Q Why is spinal fusion done?

A The 24 bones in your spine, called vertebrae, are subject to constant wear and tear. A disc that protects your spine against stresses separates each of these bones. Back pain can occur when one of these discs wears out or becomes damaged from injury or disease. Spinal fusion stabilizes the spine and reduces or removes the pain by joining two or more vertebral bones to prevent movement.

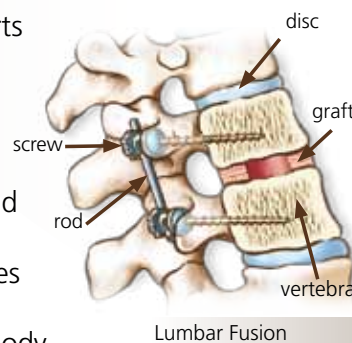


TERMS TO KNOW

- **Spinal fusion** — surgery done by an orthopedic surgeon or neurosurgeon to join together two or more vertebral bones to stabilize the spine.
- **Autograft or autologous bone graft** — bone usually taken from your hip, or other area of your body, and used in spinal fusion.
- **Allograft** — bone taken from a donor.
- **Bone morphogenetic proteins or BMPs** — chemicals produced by your body to promote bone growth.
- **Bone marrow aspirate or BMA** — bone-forming cells and natural proteins in your body usually taken from your hip by a minimally invasive procedure.

Q How is spinal fusion performed?

A Spinal fusion inserts material, called bone grafts, between the vertebral bones to encourage the body to grow new bone and fuse the spinal bones together. Other devices such as small screws, plates, rods, an interbody spacer, or a cage can help stabilize your spine while the bones are fusing and your body is healing.



Spinal fusion surgery can often be done using a minimally invasive surgical approach. This type of surgery is done through small incisions in your back. Ask your surgeon if this approach is right for you.

Q What are bone grafts?

A Bone grafts are materials that encourage bone growth and fill the gap between two bones. Several graft materials are available for use in spinal fusion. Talk to your surgeon about which bone graft option is best for you.

Autograft

① **Autologous bone graft, or autograft**, is bone and bone marrow usually taken through an incision at the top of your hip. The bone and bone marrow is put into the space in your spine to be fused. This is the most widely used material for spinal fusion because of its safety and success. There may be pain or discomfort from the incision on your hip afterwards. Wound infection and drainage may occur.

Allograft

② **Allograft** is bone taken from a donor, usually from a bone bank, where it is processed and stored. This avoids a second incision to take bone from your hip or elsewhere in your body. Since allograft does not contain living cells, it does not always grow as quickly or as well as an autograft. Screening and testing can reduce the risk of transmitting disease from a donor.